NGO

ICT and e-Readiness Self-Assessment Tool

Acknowledgements

This document is produced by NGOConnect Africa, a non-profit organisation helping non-governmental organisations in Africa better achieve their objectives through the more efficient use of Information and Communications Technologies (ICTs).

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NGO ICT and e-Readiness Self-Assessment Tool
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Please give us your feedback on how we can improve the usefulness and relevance of this instrument. We welcome constructive criticism. E-mail the author at Jean-Paul.VanBelle@uct.ac.za or enter your comments on the www.ngoconnectafrica.org forum discussion.

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Introduction and Instructions

This self-assessment tool is intended to be used by NGOs in Africa to help you check your organisation's level of maturity in the use of ICTs (Information and Communication Technologies). Our understanding is that the appropriate use of ICTs can increase the efficiency and effectiveness of your NGO, can help bridge the digital divide and can act as a springboard to enable you to do things which would be impossible without this technology.

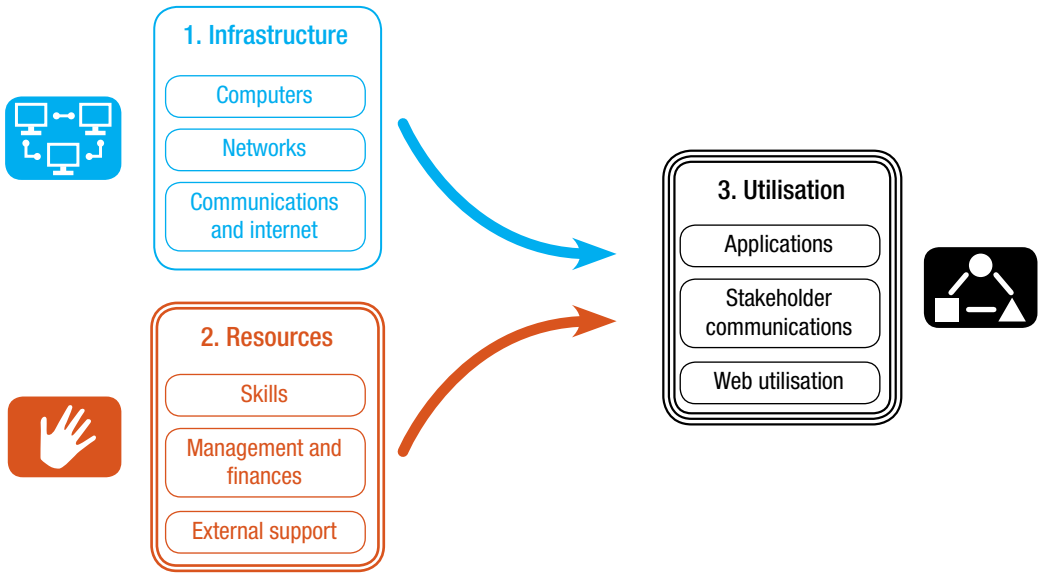
[ICT enables, equalises and is a strategic tool for advancement and progress]

We have identified four maturity levels:

- Non-existent computer infrastructure
- Early stages
- Intermediate
- Advanced

We have applied these to each of the following areas:

- The technological infrastructure: this includes computer architecture, network infrastructure, telecoms and internet access. Required resources: these include human resources, management and finances and external support
- The level or sophistication of the use of computers within your organisation is of primary importance.
- NGOs utilise skills and resources to carry out operational processes linked to:
  - Applications
  - Stakeholder communications
  - Web utilisation



It is important to note that all these resources and skills need to be at a **compatible maturity level** in order to achieve the **required ICT capability** for the NGO's operations. Because NGOs are very different in terms of size, nature and location, this document is of necessity **generic and somewhat superficial**.

To use this self-assessment tool:

1. Start with the questions for each area. The answers which apply to your situation will give an indication of your current maturity level. This is more fully described later in the document. It may be useful and instructive to read the description of the other levels as well.

Question: How many computers does your organisation have?
(tick all that apply)

Answers/Scenarios	Level	✓
Our NGO does not have any computers.	1	
We have only one computer which is used by one or two people.	2	✓

2. Once you have gone through all of the areas, decide which areas you want to improve. This could be done as a group exercise within your NGO. The idea is to pick the 'lowest hanging fruit first' i.e. improve those areas where the most benefit is gained with the least effort. The "Move to the Next Level" sections give information about the type of steps you should consider, especially for moving up the lower levels. These are in the form of brief and general hints.

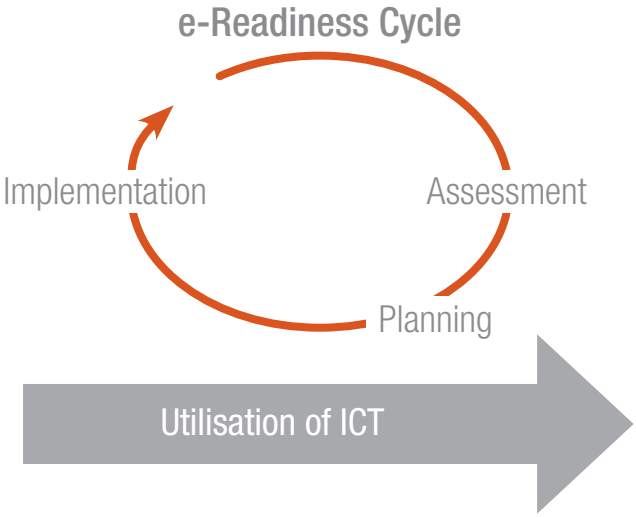
Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Take an inventory of the computers you have and what applications they are being used for.		✓		
Make a note of their limitations in terms of potential uses as well as time and resources which are lost due to breakdowns, incompatibilities or software issues.			✓	
If you have not yet created a trusting relationship with one (or two) preferred vendors, now is the time to do it (trade their initial guidance and suggestions for your loyalty in terms of future purchases).	*We already signed a 2 year contract with a vendor*			

3. You should follow up on the information sources given and obtain further help or information.

Note

Other resources will be available from NGOConnect Africa (www.ngoconnectafrica.org).



We have provided additional information boxes as well as explanations of the technical terms used in each section. Remember that you are not expected to aspire to attain level 4 in every area. For example, a small NGO in a deep rural area without electricity and telephone lines should not need an 'always-on' high-bandwidth internet connection. It is possible for an average user in most rural areas, to manage ICT processes using a cell phone link on a laptop computer in order to: communicate telephonically (VOIP), send and receive e-mails and faxes, carry out some banking processes and share electronic documents and information.

Technology Infrastructure

Many technology gurus promote the adoption of computer technology for its own sake. We strongly believe that the technology is merely a means to an end. Initially the technology is an enabler for more efficient and more effective business processes. Later it can open your organisation to new possibilities and opportunities which would be impossible without this technology. However, this does not downplay the need to first evaluate your technology infrastructure: without having sound technology in place, you will not be able to reap the possible computerisation benefits.

The three technology infrastructural aspects that we consider essential are:

- The availability of computers in your organisation
- The degree to which these computers are linked together within the organisation (the computer 'network')
- The organisation's electronic link to the outside world, more specifically the internet

Computer Infrastructure

The most essential step in moving towards computerisation is to give your employees access to computers. In the ideal world, any employee who works with information should have access to a computer. In what follows, we concentrate on personal computers in the form of laptop or desktop computers. A future extension of this assessment will deal with the exciting opportunities opened up by powerful handheld devices such as top-end Personal Digital Assistants (PDAs).

Question: How many computers does your organisation have? (tick all that apply)

Answers/Scenarios	Level	✓
Our NGO does not have any computers.	1	
We have only one computer which is used by one or two people.	2	
We have one single computer which is shared or used by many people.	2	
There are only a few computers available which are used by a few employees; most of these computers are quite slow.	2	
A few employees have their own computers but most have to share computers; many of the computers are quite old.	2	
We have sufficient computers for all employees, although sometimes employees need to share a computer.	3	
Virtually every employee has their own computer; although many of these computers are relatively old.	3	
All employees who need a computer have one; most computers are fairly recent and powerful enough to handle the type of applications we currently use.	4	

1 Level 1: Non-existent or Basic

Description	Yes	No
The NGO has no computers of its own although some staff members may occasionally use private or personal computer facilities for specific tasks such as preparing a budget, financial statement, proposal or report.		

Move to the Next Level

Buying your first computer is fraught with potential pitfalls and can be quite a challenging undertaking for anyone.

There are some essential ingredients for success:

- The most critical one is to have at least one but preferably two staff members who are sufficiently computer literate to make some important judgment calls in terms of required computer hardware specifications and the computer software programs the NGO is likely to use first.
- Secondly, it is important to find a reliable supplier. Even if you have limited funds, it is much better to pay a little more to a reliable local supplier who is likely to benefit from a longer term relationship with the NGO than to buy from a cheaper, less established operator. As a novice, you are likely to have to rely on the supplier for the guarantees and some level of support (but don't have unrealistic expectations: your supplier cannot be expected to solve every future problem and provide free unlimited informal staff training). A good way to assess a supplier is to ask a few very simple (potentially stupid-sounding) questions (that you may even know the answer to) and to check the willingness of the supplier to make time to answer you.

In cases where you have limited funds, it may be possible to make appeals to a larger corporate for cash sponsorship or a donation of equipment (which is often previously used). This is likely to consume quite a bit of staff time and, whilst used equipment may have the advantage of having some software pre-installed, it is likely to give you a number of operational and maintenance problems. What you save on initial cash layout may well be lost in terms of staff time and maintenance/repair costs.

- If you are looking for cheap but reliable computers, check out MAR (Microsoft Authorised Refurbisher) program whereby refurbished (i.e. previously used) computers are made available to qualifying NGOs – these computers have been tested and come installed with useful software. More information on this is and other offerings is available on **www.ngoconnectafrica.org**
- Sangonet makes Microsoft software available at a nominal charge (4% of the retail price) to qualifying NGOs in Southern Africa. More information can be found on **www.sangonet.org.za**

Laptop or Desktop

A difficult question for a small NGO buying their first computer(s) is whether to buy a laptop (or notebook) computer or a desktop system.

This will depend on a number of factors:

- How much **mobility** is really required (people often overestimate the amount of productive computer work they can do while travelling).
- The issue of **security** (although a laptop can be removed during the night from the NGO's premises for safekeeping, a laptop can be stolen or damaged during transit more easily – they are also more attractive targets for thieves).
- Remember that a laptop computer is significantly **more expensive**:
  - **To purchase** (i.e. you can buy a much more powerful desktop computer for the same money)
  - **To repair** (they are more fragile and prone to handling damage), to **upgrade** and to **insure**
  - BUT they **provide mobility**, can easily be **locked up** and can run off **battery** if there is a temporary lapse of mains power

This is not the space to discuss computer specifications. Most new computers will suffice for the type of information processing tasks performed by NGOs (unless you have very heavy multimedia requirements).

However, important areas to look out for are those areas where vendors can make quick savings but which may reduce your computer productivity significantly:

- The first area of concern is **insufficient computer memory ('RAM')** which has a very significant impact on computer speed
- The second 'false saving' is buying the **cheapest possible input/output peripherals,** especially the keyboard and monitor

You are likely to spend a lot of time inputting data, so spending the equivalent of US$10 extra to buy an ergonomic high-quality keyboard and reliable mouse is a good investment. You will also spend almost all of your computer time looking at the computer screen, so invest in a good and relatively large monitor although the additional cost may be more significant.

2 Level 2: Early Stages

Description	Yes	No
Your NGO has one or a few computers; these may already be a few years old and could have problems using some of the current technologies.		
They often run on an older version operating system (such as Windows98 or Win2000).		
They are usually only used for basic personal productivity applications (such as word processing, picture editing, e-mailing and web-browsing), or business applications (e.g. bookkeeping/accounting, budgeting and simple record keeping).		

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Take an inventory of the computers you have and what applications they are being used for.				
Make a note of their limitations in terms of potential uses as well as time and resources which are lost due to breakdowns, incompatibilities or software issues.				
Ensure that your staff members' computer competence is moved up to level 2 or beyond (see section on human resources later in the document).				
Prepare a plan for acquiring additional computers, carefully looking at current and future application needs and matching them with your staff situation.				
If you have not yet created a trusting relationship with one (or two) preferred vendors, now is the time to do it (trade their initial guidance and suggestions for your loyalty in terms of future purchases).				

Open-Source Software

The real reason for deciding which computer to buy should be determined by the type of applications you wish to run: you do not want a computer for its own sake, but you really want a solution or productivity tool. However, before you can run any applications, you need to have an **operating system** loaded. In most cases, a brand new computer will come with the latest version of Microsoft Windows. A second-hand computer may have an old Windows version or, alternatively, an implementation of the Linux operating system (like Ubuntu). There is also the possibility of buying an Apple computer with its own operating system (OS X).

Before you decide on any non-Windows operating system (and note that the alternative operating systems have their strong merits), make sure that you have a reliable support system in place (in-house skills and external supplier). Although the alternative operating systems are generally very reliable, managing or fixing Linux and Apple computers require skills which are generally less common, harder to find and thus often more expensive.

For the application programmes (or software) you will often have the choice between commercial off-the-shelf software, 'free' open-source software (OSS), and custom-development. Custom-developed software is strongly discouraged for new-comers in the computer world because of its cost and long-term support issues, unless you have a very specific and special need. Generally, as a novice, you cannot go wrong by opting for the industry-standard commercial software (such as Microsoft Office). There are some good arguments (cost, ease of use, lower hardware requirements) for using open-source software (such as the free and very functional OpenOffice productivity suite) as long as you are aware of the potential issues such as training, transfer of user skills and possible compatibility issues. NGOs have the exciting opportunity to obtain Microsoft software almost for free.

Refer to **http://store.sangotech.org/getting-started** for more information. At the other end of the spectrum, the Open-Source software community has created a CD with a full software solution for NGOs: see **http://ngoinabox.org** for more information.

3 Level 3: Intermediate

Description	Yes	No
The organisation has a number of computers – mostly desktop computers but possibly laptop computers or PDAs (more compact handheld computers) where warranted.		
The computers are fully compatible with each other, hopefully mostly sourced from the same vendor and upgraded or replaced occasionally.		
Apart from perhaps a few older PCs, most are sufficiently powerful to handle an up-to-date operating system and the latest versions of the required software.		
The peripherals such as keyboards, mice, monitors, printers, etc. are all in good order and are replaced when needed.		

Move to the Next Level

Moving to the next level requires that staff skills, planning and financial resources are all adequate i.e. at level 4 or very close.

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
The organisation needs to become more mature in managing its systems which requires a full stock-taking of current systems, and the desired configurations for planned uses. This is called a gap analysis and should lead to building a plan on how to move forward. The gap analysis should be driven primarily by focusing on the application or business needs but it is important to get the inputs from the users (and other relevant stakeholders). (A fancy term used in this context is the concept of systems architecture, but most NGOs can settle for a less formal approach.)				
Plan and act on standardisation or, at least, harmonisation. It is very important to reduce incompatibility, maintenance and upgrade issues. But this should never become a goal in itself.				

4 Level 4: Advanced

Description	Yes	No
The organisation has a full complement of mostly recent hardware which can work together.		
Most have been sourced from a single or two vendors.		
The NGO has a complete inventory of all systems (hardware and software) including full documentation (invoices, warranties, installation documentation, software installation discs, and software manuals).		
The specifications of newly purchased computers exceed the minimum requirements in order to leave room for future expansion or improved performance.		
Where applicable or necessary (e.g. when using servers, when power supply is highly erratic or continuity is vital) Uninterruptible Power Supply (UPS) unit(s) are acquired.		
The computer peripherals are of high quality with emphasis on ergonomics (especially keyboard, mouse, and LCD monitor).		
Preventative maintenance is regularly performed by checking systems.		

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Description	Yes	No
A flexible upgrade plan exists that determines when to replace or upgrade computers but also provides a budget plan.		
All software (including the operating system) is version-controlled (i.e. all computers have the same version installed, including relative recent, stable updates) and software updates are rolled out in a planned way rather than performed ad hoc.		
Where different packages are used, these are compatible (i.e. they allow interchange of data through compatible file formats) or even fully integrated.		
There is a staff-accessible library of manuals, documentation and training resources (books, videos or CDs).		
A more advanced level would use a system image approach for standard user configurations which is copied to each workstation.		
Ideally all software license documentation is managed centrally.		

Network Infrastructure

Once you have more than one computer, you will quickly discover the need to share information between them, or access devices connected to one of the other computers, or share internet connection. Indeed, just like a team can be much more productive and powerful than an individual, many benefits of computerisation can only be realised once you connect your computers in a network.

Question: How are your computers linked together ('networked')? (tick all that apply)

Answers/Scenarios	Level	✓
Our computers are not linked.	1	
Most of our computers are linked using a cabled network (e.g. Ethernet).	2	
We have a wireless network (e.g. WiFi).	2	

Question: Which of the following networking components do you have?
(tick all that apply)

Answers/Scenarios	Level	✓
Our computers are just connected directly with each other so we can access some of each other's folders and the printers connected to other PCs.	2	
We share our printers across the network.	2	
We have a dedicated file server which stores or shares group information.	3	
We have a number of applications which run on a central server.	4	
We have a central database server which stores information centrally.	4	
We have a web server and/or a mail server.	4	

Level 1: Non-existent or Basic

Description	Yes	No
The organisation's computers are not linked together.		
If files need to be used on another computer, they are transferred via disk, CD-Rom or USB flash memory stick.		
All printing is done on a computer with directly-attached printer.		

Move to the Next Level

All popular operating systems released in the last decade are network capable and support so-called peer-to-peer networking in a relatively straightforward manner.

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Make plan to check compatibility between operating systems. Choose and purchase network hardware accordingly. Some technical expertise required here. Ask your vendor, or even a knowledgable teenager may help.				
If possible have the same version of the operating system, such as Windows XP (Service Pack 3), Windows Vista, or Ubuntu 8 on all computers. This simplifies matters.				
If all computers are close together, use cabled network. It is easiest to use Ethernet cables and a network hub. This type of network is usually faster, more secure, more reliable and cheaper, especially since most computers already have an Ethernet network card built in.				

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Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Where computers are spread over different offices, it may be better to install a wireless network (i.e. WiFi). The equipment is typically more expensive (although all laptop computers are now WiFi enabled) but some savings are possible if a wireless ADSL router/hub is also acquired for Internet access. WiFi gives more flexibility (especially if there are roving notebook computers) and requires no cabling but needs to be properly set up to avoid security problems.				
In order to share information, it is important to create shared folders or drives on each workstation (or open up the entire computer to everyone).				
To share devices such as printers, scanners, fax, modems etc. you need to make a list and create access to all shared devices.				

Level 2: Early Stages

Description	Yes	No
The organisation has a peer-to-peer network covering all or most computers.		
It is used to transfer or share files using shared folders and share specific devices such as printers or faxes which are attached to specific computers.		

Move to the Next Level

When data starts becoming more communal, a peer-to-peer network will no longer suffice. Sometimes it will be hard to synchronise file updates or versions, sometimes data needs to be shared simultaneously between users, or multi-user applications start being used in the organisation.

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
It may be necessary that different users need to be given differential access to data, e.g. based on functional area (privacy issues) or job responsibility (skill level).				
Installing a proper local area network ('LAN') with a central server on which multi-user applications and shared data are installed, is the next logical stage. Also the management of devices (high-speed or colour printers) or data (file backup) is simplified by having them all managed by or stored on a single computer.				

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Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
A cost analysis is important because server computers and software are usually significantly more expensive than a desktop computer though it is usually not necessary for an NGO to have a high-end server.				
A decision must then be taken on the desired server platform, taking into account the internal (and externally available) skills and support, total system cost and its integration with the desktop computers. It is good to know that all modern mainstream server operating systems will accommodate the future growth and address most security concerns for an NGO so these are not really a concern for you. Similarly, network speed is unlikely to be a serious constraint when using modern LAN components or devices. However, moving up to a server-based LAN will usually mean the involvement of a vendor which is likely to have a significant cost impact.				
Although a simple LAN can be managed quite easily and with relatively low skills and time investment, it is nevertheless important to do a requirements and feasibility analysis in order to identify what data/ applications needs to be stored on the server and what remains on personal computers.				
Skills are now quite important so an internal (or, possibly, external) skills gap analysis is equally necessary.				
Thought must be given to both security and business risks, since having all data centrally accessible exposes the data more easily (this is merely the counter-side of easier access and management).				
You should appoint (and train!) an internal network administrator (with another staff member as fallback position in case of leave/resignation), ensure that proper security procedures are in place (e.g. which user gets access to what data, how often passwords are changed etc.), and that all users understand and agree to the file sharing, location and naming conventions (when and where a file must be stored on the server, how to change files and name the different versions). Set up a server backup procedure (how often and where to) and ensure that all business continuity issues are addressed (e.g. secured power supply, possibly with an uninterruptible power supply for the server, and procedures for server restore/update).				
Formal network documentation is now also important. This includes a list of users, their network names and their access rights, computer network addresses (MAC and IP), and wiring diagram.				

Level 3: Intermediate

Description	Yes	No
The organisation has a file server which hosts shared data as well as network and groupware applications.		
All computers are connected to the server via a LAN (cable or WiFi) and are permanently connected.		
Users have a network login with access rights based on their needs profile.		
Wireless networks use security (e.g. WEP, WPA).		
The LAN is administered by an appointed network administrator (this is likely to be only part of someone's job description) who has received the necessary formal network training in order to ensure that proper security and backup procedures are in place and maintained.		
The organisation has a list of all network addresses and users.		

Move to the Next Level

When the number of organisation-wide shared applications increases, the NGO will outgrow its file server, at this stage it must:

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Do a careful assessment of the required applications and consult with a trusted vendor or consultant.				
Get the necessary advice on system configuration, operating systems, the number and type of servers etc. This falls outside of the scope of this document and is likely to be much more specific to your organisation's nature, its needs and its size. The main driver is likely to be the type of applications you will (want to) use e.g. ERP or CRM software, mail server etc.				
Some explicit decisions will need to be made about where to store the data: on a single file server, spread over different application/database servers, on separate network-attached storage (NAS) devices or, if the organisation is quite large with big data needs, you might even consider a separate light-weight storage area network (SAN).				
Another decision which is very important (and a relatively recent trend) is to consider housing all required servers within one or two powerful physical computers by means of virtualisation software. This eases management and may reduce costs. Note: A detailed discussion of these options is beyond scope of this tool.				
Consider the physical environment for these servers. In many African locations temperature control and dust elimination is a big challenge.				

Level 4: Advanced

Description	Yes	No
The organisation has moved beyond the file (and printer) server by having one or several dedicated application servers, database server, web and mail server (if applicable) and network-attached storage or possibly even a separate storage area network (SAN) or server.		
Network tools are used occasionally for network monitoring and optimisation.		
The network administrator has significant technical skills and the network budget is significant and therefore explicitly factored in every year's budget.		

Internet/Telecoms Infrastructure

The biggest (but, in Africa, typically also **the most difficult and expensive**) ICT infrastructural payoff, comes from having **access to the internet**. Being able to communicate electronically with stakeholders and similar organisations as well as being able to tap into the wealth of useful information available on the internet, is often the ultimate payback and operational enabler of ICT investments. However, this is also the area where NGOs in Africa experience the so-called digital divide most acutely.

Internet access is typically much **more expensive in Africa than anywhere else in the world** – in the order of up to **100 times** more than in Asia or the US. Even more problematic is that **many rural areas simply do not have ANY affordable internet access options.** Luckily, more and more cell phone companies are providing a wireless internet option which may be affordable for low-bandwidth applications. Currently heavy investments are being made to give the continent as a whole much more and cheaper access to the internet by dramatically increasing undersea cable capacity. Finally, there are also some exciting moves to provide affordable satellite internet access in the medium term.
You need to make sound decisions while the internet access is still expensive. We advise you not to go into long term contracts with vendors for little savings. Just be on the look out for options as they develop.

Question: How do you connect to the internet?
(tick all that apply)

Answers/Scenarios	Level	✓
We do not have direct access to e-mail or the internet from within the organisation.	1	
We tried to buy a copy of the internet but apparently it does not fit on our computer.	1	
We use a fixed telephone line dial-up connection using a modem.	2	
We have an ISDN line.	3	
We have a DSL connection (e.g. ADSL).	3	
Other (e.g. WiMax or satellite).	3	
We use mobile connection such as GPRS (level 1) or 3G.	3	
We have a dedicated leased data line.	4	

1 Level 1: Non-existent or Basic

Description	Yes	No
Our organisation is not linked to the internet.		
Some staff occasionally make use of publicly available internet facilities (library, computer centre, internet café, cyber café) for personal purposes and, sometimes, use their personal (home) internet facilities for organisational purposes.		

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Before deciding, it will be necessary to compare the availability, the pricing and the performance of a fixed telephone line dial-up with a fixed line DSL connection and with any wireless options that are available (2.5G or 3G). Unfortunately, in many areas across Africa, especially in rural areas, you may have none or only one option (but check carefully with your cell phone providers). In fact, in some areas the only viable option may even be an expensive satellite connection, although there are moves underfoot to make this a much more viable option.				
Unless you have some prior internet experience and knowledge of local options, you are likely to need some technical assistance with this. It is also quite important to speak to users (or organisations) that have internet connectivity and ask for their advice.				
Collect some information on Internet Service Providers (ISPs) and check their offers: • How much does the initial connection (installation) cost? • What is the monthly subscription fee? • How much data can you download? • Do you get e-mail addresses (and how many)? • Do you get web space (good for a temporary or trial NGO website)? • What type of support is available? • Do they provide the modem (to connect to the internet)? • Is there a minimum contract period?				

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Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Find some help to fix problems that arise over time, e.g. with system upgrades.				
If you are in a metropolitan area and can obtain a reasonably priced ADSL connection, you should be able to skip level 2 and move straight up to level 3.				

Note

- It is often worthwhile to pay a little extra for an ISP which has a proven track record and accessible support help lines.
- Support is expensive for ISPs to provide and the cheaper ISPs often skimp on support since this may be quite invisible when newcomers choose between an ISP.

2 Level 2: Early Stages

Description	Yes	No
The organisation has non-permanent low-bandwidth internet access from one computer or a reasonably advanced mobile phone, or by means of an account with a nearby and easily accessible internet café.		
Typically this is by means of a dial-up modem although a wireless GPRS-enabled mobile phone can also be used. The limited bandwidth is used to down/upload e-mail and do some directed web-browsing.		
Internet access is limited to one or a few key staff members who typically have at most one (or very few) relatively short internet sessions per day.		

Move to the Next Level

When moving up to a permanent internet connection with access from multiple computers it is useful to:

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Conduct an informal user needs analysis within the organisation to assess which users need e-mail and internet access and their anticipated bandwidth requirements.				

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Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Investigate the various local options available for internet which typically range from: • Dial-up modem • ISDN • ADSL • Wireless 2.5G/3G (not all of these may be available across Africa and in rural areas). The key selection criteria should be: • Monthly subscription cost • ISP reliability • Quality of telephonic customer support • Contract lock-in periods (see above).				
Check that your ISP will provide you with a number of e-mail accounts since one single account is likely to be insufficient for an NGO.				
Another decision which is very important (and a relatively recent trend) is to consider housing all required servers within a single or two powerful physical computers by means of virtualisation software. This eases management and may reduce costs. Note: A detailed discussion of these options is beyond the scope of this document.				

Note

- Sending text e-mail, small documents, occasional faxes and managing text-only or low-graphics websites requires relatively little bandwidth
- Frequent transmission of large documents and multi-media downloads such as voice, music, video, streaming media or VOIP will require higher bandwidth.

3 Level 3: Intermediate

Description	Yes	No
Your organisation has a permanent internet link, normally using a broadband access method or in the case of a remote rural NGO, at least a semi-permanent connection to the internet.		
Via the LAN, a fair number of the network computers share this internet access, although some types of internet traffic may be blocked.		
A firewall has been installed for secure incoming traffic but possibly also to restrict certain types of outgoing traffic.		

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Consider moving to a higher bandwidth internet connection. This requires a careful and formal analysis of current and future bandwidth requirements.				
Calculate the financial burden of moving to a higher bandwidth as well. Rural and small NGOs are unlikely to need to move to the next level.				

4 Level 4: Advanced

Description	Yes	No
Our organisation has a sophisticated and high-bandwidth internet connection, e.g. ADSL or 3G wireless.		
Ideally there is a backup option of either using two internet service providers (ISPs) or of having an emergency dial-up modem or wireless connection.		
Our NGO monitors its bandwidth utilisation and possibly implements packet shaping and traffic prioritisation.		
We use a caching/proxy server (If the organisation is fairly large, it is likely to have its own mail server and, possibly, web server.)		
Internet security is in place; firewall, internet virus protection, password management and policies (e.g. enforcing strong passwords that needed to be changed every three months) are in place.		

Resources

It is important to ensure that you have sufficient resources to deploy ICTs. There is often a trade-off between the different resources: e.g. if you have strong financial resources, you can afford to contract external consultants or train your internal staff. On the other hand, if you have ICT-literate staff, you may well be able to find cheaper alternatives and reduce support requirements. Similarly, if you have enthusiastic and motivated staff, you may be able to explore low-cost alternatives such as:

- Use a reliable and trustable source, such as Microsoft's Authorised Refurbishers program (Community MAR) to get very low cost computers
- Solicit corporate computer donations
- Get Microsoft software virtually free under its NGO programme
- Or explore open source software options.

So investing more in your human resources[3] (by training and paying them well) may save you money on hardware, software and consulting.

Human Resources (Training, Skills and Motivation)

Despite the emphasis on the technical aspects of ICTs, **effective ICT use is only possible if you and your staff have the adequate skills, attitude and motivation.** The most expensive, up-to-date computers will stand idle if your staff does not want or know how to use them effectively, whereas motivated staff will usually find ways to use even outdated software and hardware in surprisingly novel and productive ways. This tool focuses on your staff's technical (i.e. computer) skills but it is equally important to motivate your staff by convincing them of the value of computer use in your organisation (and the benefits to themselves).

Interestingly, appropriate computer training will provide your staff not only with the necessary skills but often also with the motivation to use computers. And, counter to the fears of many executives, staff who have been trained by an organisation will often develop a stronger sense of loyalty to the organisation. The organisation's investment in them makes them feel valued as individuals so they are less likely to use their skills as a motivation to move on to 'greener pastures' i.e. other organisations.

Of course, you will need to reward your staff adequately for their newly acquired skills and additional contributions to your organisation.

3 Ok, we use the term 'human resources' instead of 'staff', not because we want to sound pedantic but because we believe strongly that you should view and treat your staff as valuable (and valued!) resources instead of hired labour.

Question: Which of the following statements apply to your organisation?

Note that any 'training' mentioned below refers specifically to ICT-related training.

(tick all that apply)

Answers/Scenarios	Level	✓
No one in the organisation knows anything about computers.[4]	1	
We do not train staff because as soon as they have computer skills they leave us.	1	
Our top management of the organisation does not know much about computers.	1	
We do not have sufficient funds to train staff.	1	
We have not really found any good computer training available locally or which we can access.	1	
Every now and then we (could) get local or foreign volunteers who (could) assist us with our computers.	2	
We have at least one person in our organisation who knows a lot about computers.	2	

Question: Does your organisation provide training to staff to use ICTs appropriately?

(tick all that apply)

Answers/Scenarios	Level	✓
No.	1	
Yes, a few staff have been sent on computer literacy training courses.	2	
Yes, we provide in-house training to all employees, as and when needed.	3	
Yes, we send our staff on outside training course (i.e. at an external location) whenever needed.	3	
We have a library of computer training materials consisting of reference books, audio-visual course material (e.g. instructional videos or DVD) and/or training software.	3	
Our staff can make use of on-line training using the internet.	4	
Yes, we train all newly hired employees in our organisation internally.	4	

Question: If your organisation trains employees (using in-house or external trainers), what type of training is given?

(tick all that apply)

Answers/Scenarios	Level	✓
Basic computer use (file management, word processing, e-mail).	1	
Computer productivity applications (spreadsheets, accounting, professional communication/presentations, multimedia production, digital story telling, etc.).	2	
Very specific applications (specialised software).	3	
Advanced computer use (databases, contact management).	3	
Programming.	4	

[4] Generally, the degree of innovation and strategic direction of any small organisation is almost entirely determined by the attitude and character of its top management. If top management does not honestly believe in the value of ICT, the organisation as a whole is likely to never make productive use of ICTs. This is even more the case for NGOs than it is the case for for-profit businesses.

Level 1: Non-existent or Basic

Description	Yes	No
The organisation's staff has little or no in-depth computer skills even though one or a few staff members have basic knowledge of how to turn a computer on and print, and can use the basic, most frequently used features of word processing software.		

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
You need to provide computer literacy training to at least a few key (and keen) staff.				
Consider certification after the course. This has an important motivational aspect, which also helps with the staff member's career path.				

Note

Basic computer literacy courses are offered almost everywhere - some staff may be able to use self-study materials (books or multimedia) or online courses.

Level 2: Early Stages

Description	Yes	No
All staff who have to use computers (current or projected) have acquired basic computer literacy. This includes basic tasks such as how to manage file and folders (e.g. copying or moving files, creating folders), security principles (data backup, passwords), and the operation of standard software packages such as the word processor, e-mail client and web browser.		
The organisation's key staff has more formal or advanced skills and one or a few 'power users' are being groomed (because of their self-expressed interest and abilities/aptitude) into more technically knowledgeable staff.		

Move to the Next Level

Once the basic computer literacy skills are in place, it will be a waste of valuable (staff) time and (the organisation's) money to send your staff on just any computer-related training courses. It is important to clearly identify the exact computer skills which will be needed.

Typically, there are two types of skills, which address different organisational needs:

- The tasks that would typically be performed by all or most employees address the generic organisational needs
- Technical skills which address very specific and usually quite technical needs such as dealing with the technological infrastructure (networking, server configuration, database management, web design) or the supporting/training of other staff

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Identify staff with potential/aptitude, motivation and organisational commitment to train to fill HR skill gaps.				
Depending on the size of your NGO create specific ICT posts to address your ICT support needs.				
Acknowledge the ICT component of certain staff's job functions by reducing their other work commitments and/or providing additional (financial) reward.				

3 Level 3: Intermediate

Description	Yes	No
In a small NGO: at least two or three staff members have technical skills sufficient to manage the network and full desktop configuration.		
They are the first 'line of defence' in dealing with or solving technical problems and know how to access external resources (vendor or internet) for more complex problems which they cannot solve.		
In a larger NGO: (a) specific technology infrastructure position(s) exists e.g. LAN administrator or IT support. Their contribution is formally acknowledged in their workload/job description.		
All staff dealing with information are computer literate. This includes understanding the need to backup data, how to deal with secure or sensitive data, and the need for secure passwords.		
Staff can protect new files with passwords and know how to change their own log-in passwords.		
About half of your staff can be viewed as fully proficient (power users) in the relevant software packages.		
Formal and regular training course schedules are managed as part of staff development.		

Move to the Next Level

It is difficult to give generic advice on how to move to the next level because it will depend a great deal on your financial resources, the availability of training nearby and the general education level of your staff.

However, a key area of consideration is the **attitude of management towards its human resources:** are staff **REALLY** considered to be the **most important resource in the organisation?** If so, computer training will be part of a long-term career development programme.

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
You should give careful consideration to the development of an in-house training resource centre, consisting of manuals, handbooks, audio-visual training materials (video and DVDs) and training software.				
The use of online training should be investigated strongly, especially where local training resources are inadequate. Online training provides international top-quality training with certification options within a self-paced environment, though it requires significant motivation and personal commitment on behalf of the individual.				

4 Level 4: Advanced

Description	Yes	No
One or two staff members have sufficient skills to develop in-house software customisation.		
When new staff are hired, their computer skills are assessed as part of the application and a person-specific training plan is developed for each employee (and reviewed/updated regularly for existing staff).		
At this stage, our NGO's training and HR development strategy is perceived as a key positive employment factor by prospective job applicants.		
Even when staff decide to leave, our NGO's investment in training is seen by the executive as making a contribution to a wider community development.		

Management and Financial Resources

A key step to deploying ICTs is to have some financial resources to:

- **Buy the hardware**
- **Acquire software**
- **Maintain the systems**
- **Pay for connectivity**
- **Provide training to staff**

Equally, if not more important to the continued positive impact of ICTs in an NGO, is the need to **have proper management of ICTs in place.** This includes the planning of future ICT adoption as well as the need to put proper procedures in place. The latter is very important because the computerisation of information exposes the NGO to a very different set of business and continuity risks than manual systems: some problems are solved but **new potential problems will arise if insufficient care is taken**. This section looks mainly at **security** and **backup** issues as well as some **forward planning**.

Question: How would you describe your organisation?
(tick all that apply)

Answers/Scenarios	Level	✓
We have an unstable income ('fund stream') and are struggling to meet costs.	1	
Some of our computers have anti-virus software installed.	1	
All our computers have anti-virus software installed and the virus signature file is updated regularly by the users.	2	
We have a fairly stable income and have our cash flow under control.	2	
We have carefully thought about the possible risks which ICTs bring to our organisation.	2	
We have made a backup of the critical organisational data on our computers at least once in the last 3 months.	2	
We have identified all the data in our organisation which is sensitive or has privacy implications e.g. financial information, bank and/or personal details of members and staff.	2	
We have examined all insurance options for physical computer systems – both desktop and mobile computer devices used outside the office (note that sometimes it may not be cost-effective to insure low-cost equipment).	2	
Our income is pretty much guaranteed over the medium term and we have a good income and expenses budgeting system.	3	
We have an action plan on what to do should our computers break down/get stolen.	3	
We make a backup of all important data on our computers at least once every month.	3	
All computers have industry-leading anti-virus software which cannot be disabled. The virus database is updated automatically on a daily basis.	3	
All sensitive and private data is stored in encrypted form on all our computers and access is by means of password.	3	

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Answers/Scenarios	Level	✓
We automatically backup all organisational data and key application settings weekly. We have also tested our ability to restore the data from our backup at least once in the last six months.	4	
All sensitive and private data is encrypted, stored on a physically secure computer system, cannot be copied to un-secured locations (computers or removable media), and staff are required to have secure passwords which they need to change at least twice each year.	4	
We have conducted a comprehensive risk assessment for all our ICT-related assets, including identifying human resource, data/information, business continuity and external threats etc. and have made plans or have put in place procedures to deal with most of the risks.	4	
We have examined all insurance options for computer systems including the cost of recovering data and possible business losses from lost, damaged or stolen computers.	4	

Level 1: Non-existent or Basic

Description	Yes	No
Our organisation is struggling to meet expenses and has an uncertain income flow. Consequently there is no dedicated ICT budget.		
Our NGO may rely on donations for hardware, which may incur longer term costs because of repairs, incompatibilities, training issues and system unavailability.		
There is likely to be at least some unlicensed software in use in the organisation (operating systems or applications).		
There is no formal planning process.		
Little or no thought is given to possible security and privacy issues. Management deals with ICT problems as they arise.		

Move to the Next Level

There are creative solutions for organisations with limited funds to get an entry-level computing solution (see the notes under the computer infrastructure heading). Obviously this is not the place to give guidance to NGOs on how to fundraise (although you should be aware of the 'chicken-and-egg' situation whereby funds are required for ICT adoption), but ICTs can facilitate and improve income and fundraising e.g. by donor database mailing, web-based donation options, producing more professional-looking fundraising proposals, web marketing (of the NGO and giving exposure to donors/sponsors) and public relations.

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
An inventory of unlicensed software should be made and steps taken to legalise the required software and remove the other software.				
A key ICT person should be trained in data backup procedures and some budget for backup devices (e.g. removable storage) and software should be allocated.				
The information held by the organisation should be looked at to see what information is of a sensitive nature or may pose privacy issues (this is especially true about personal information on staff, members and finances).				

2 Level 2: Early Stages

Description	Yes	No
The organisation has set aside a (limited) budget for ICT expenses, including the upgrading of hardware, software and skills training.		
A number of the management issues resulting from ICT use have been considered and some of the more important ones have been addressed.		
A key risk management issue is what would happen if hardware were to break down/be lost or stolen. (What are the implications for the data/information assets of the organisation?)		
One of the key procedures to consider is continuity planning which would include a regular data backup procedure.		
Careful consideration is also given to the protection of sensitive/private data and basic procedures are put into place for security management.		
Staff have been informed about the risk issues. They know about sensitive and private data, what computer viruses and other malicious software is, and are generally quite security conscious.		
The organisation does not condone unlicensed (illegal or pirated) software.		

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
A knowledgeable staff member should be trained in and tasked with conducting a risk analysis of the ICT assets of the organisation (hardware, software, data, staff) with a heavy emphasis on data backup, business continuity and security issues.				
Alternatively this could be done by a knowledgeable and trustworthy consultant. This would require creating a record of the ICT assets and updating it as new assets are acquired/created.				
The key risks should be highlighted, assessed (in terms of probability of happening and potential losses incurred) and the cost of protecting against risks investigated.				
Procedures should be put in place for those risk areas which could either threaten the survival of the organisation, where the cost of mitigation is less than the expected loss (probability of happening times expected losses) or where the mitigation procedure costs are relatively minor (e.g. sensible password selection and encryption of sensitive data).				
Conduct staff training (ideally through personal briefing sessions) to make all staff aware of the security and risk issues and what their role is in preventing these.				

Level 3: Intermediate

Description	Yes	No
A systematic and formal risk-management exercise has been done and the key issues of data management and backup as well as data access have been addressed.		
Business continuity has been addressed (i.e. there is a procedure in place on how to replace information systems relatively quickly should they fail/break down/get stolen etc.).		
All staff are aware and trained in basic security issues (e.g. why privacy and security is necessary, how to choose secure passwords and keep them secret).		
Our organisation has an adequate budget for hardware and software.		
There is a fairly complete inventory of all ICT assets, including hardware, software and information.		

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
The ICT asset register is formalised. This means there is an electronic inventory of the organisation's ICT assets (see under level 4 below) which is routinely updated with the acquisition or creation of new assets such as the purchase (or disposal) of computers, installation of software, creation of new data structures, and the updating of staff skills database from staff hiring and training records.				
The ICT risk-management exercise is conducted and updated on a regular basis (e.g. once per annum), possibly as part of a wider organisational audit.				
Procedures are put in place to mitigate against the various risk factors, but these are regularly reviewed from both a cost and operational perspective (e.g. by testing the restoration of backed up data or the more encompassing organisational disaster recovery plan).				

Support

It is important to have an external ICT support system or resource access. When using ICTs, **there are many things that can and will go wrong**. Generally problems are addressed in a tiered-level approach. **Most problems or issues** are likely to be **quite basic** and should ideally be **resolved in-house** (e.g. how one achieves a particular function in an application or the diagnosing and fixing a simple hardware problem). You will quickly run out of goodwill if you need to draw on a favour from an (external) IT-savvy friend each time you need to replace a printer's ink cartridge, your internet link is down, you install a new program, you need to know how to format a table or you have forgotten where you saved a document.

However, a number of problems are likely to be more technical and/or **require specific expertise**. Developing the skills required to build a fancy website, to configure a mail server or to replace a computer hard-drive/power supply are not really necessary inside a small NGO and these are initially best sourced from an outside consultant or vendor on an ad-hoc basis. In the longer run, you should slowly transfer certain ICT skills from outside support sources to in-house skills. When you set up your first cabled network for example, you are likely to require your local IT vendor to help you out, but you should quickly learn how to add your own computer 'nodes' (network connection points). Similarly, installing memory into a computer or configuring new software applications are easily learned skills once the initial, and mostly mythical, computer-phobia barrier has been broken.

For a typical deep-rural organisation, it may never be possible to have physical access to reliable, knowledgeable IT support people nearby. Consequently, it will need to build up stronger in-house skills – although geographically isolated NGOs typically have already (by necessity!) built up a strong 'can-fix-anything' attitude. However, **it should not discount the possibilities of telephonic support, internet support forums** (especially useful and often free – but obviously you need to get the internet to work) **or even remote diagnosis** using remote desktop control software.

Note

Since your external support is typically outside of your control, this section has no 'moving between levels' option, but some pointers on how to deal with the situation are given.

Question: Who supports or maintains your computers and the software running on them?

(tick all that apply)

Answers/Scenarios	Level	✓
No one really.	1	
In-house (internal) person.	2	
Outside (i.e. external) IT service provider.	2	
Vendor or supplier of the system.	2	
We have a formal computer support and maintenance contract with a local supplier/vendor/consultant.	4	
Combination of above or other.	3	

Question: If it is an in-house (internal) person, who is it?
(tick all that apply)

Answers/Scenarios	Level	✓
The financial manager or accountant.	1	
Just a staff member who happens to know a lot about computers.	2	
A dedicated IT person or specialist.	3	

Question: Which of the following statements apply to the area in which your organisation is located?
(tick all that apply)

Answers/Scenarios	Level	✓
We have cell phone coverage but only for voice and text messages.	1	
Our cell phone provider provides data services including internet access.	2	
At least one reputable vendor nearby sells and supports personal computers.	2	
At least one reputable business nearby sells and supports standard software.	2	
We know at least one person in the neighbourhood who can write customised computer programs.	3	
There is a tertiary or higher education institution (e.g. university) within one hour's travel distance away.	3	
There are computer training courses offered within one hour's travel distance away.	3	
We live in a big modern metropolitan area such as Cape Town, Johannesburg, Durban, Dakar, Cairo or Nairobi.	4	
There is a public internet access facility (e.g. telecentre, library or internet café or cyber café) nearby.	2	
There is a public internet access facility nearby but it is too unreliable or expensive.	1	

Level 1: Non-existent or Basic

Description	Yes	No
There are no or hardly any easily accessible external resources for the organisation.		
Hardware and software is sourced from a remote vendor.		
Staff training typically has to happen by sending staff away on remote, residential course training.		
Local advice and technical assistance is almost impossible to achieve.		

Important tips:

At this level, it is important to build additional self-reliance skills (i.e. your first line of problem resolution is critical). When obtaining ICT resources, support and maintenance should be an over-riding issue. When selecting an internet service (provider) for example, **you must ensure that strong telephonic support is available**, even if the service charges are higher. When buying computer hardware, opt for high quality equipment with long warranty clauses (e.g. buy a standard model instead of a no-name brand which is often local assembly of lower-quality components). When acquiring software, spend some additional money on manuals or books explaining how to install and use the software.

Creative suggestions/innovative ideas:

However, be prepared to dig a little deeper into other possibilities:

- If there is a high school nearby, it may be possible that one of the teachers (or a smart pupil) has more computer knowledge than would commonly be assumed. Given some financial incentive, you may well secure a long-term support source.
- For once-off tasks such as setting up a network or designing a website, you may be able to use an international volunteer wishing to do some 'in-Africa' volunteer work in exchange for board and lodging. More typically, a volunteer would be mainly involved in your day-to-day activities but may have sufficient technology skills to address your ICT needs.
- Be sure to transfer some of the skills to your own staff so that the ICT solution is sustainable.

2 Level 2: Early Stages

If there are limited support structures in your area:

- Your first option is to check if there are any IT vendors in your neighbourhood – this is usually a computer retailer or an internet café. These people are not always equally skilled or reliable in all ICT areas.
- However, you should realise that the ICT field is so vast and complex that no one person can hope to solve every, or even most problems.
- Ideally, you want to build a trusting longer-term relationship with your IT vendor/supplier.
- Although you should never write blank cheques, being too stingy and bargaining your supplier down to the last cent every time you acquire something or, worse, sourcing your computer from a far-away supplier to save a money and then relying on your local vendor to deal with your ICT problems is most definitely NOT a way to build up a mutually beneficial relationship.
- In small communities, politics are likely to play a role and business people have long memories. Do not assume that support and maintenance are unlimited and forever free when you buy a computer – the last thing you want to have is to annoy or alienate your vendor by calling him/her repeatedly for ID-ten-T errors[6].
- In addition, most smaller towns will have a number of IT knowledgeable people – often people who have migrated from larger metropolitan areas, work for larger organisations (e.g. banks or national retailers) or people who have recently acquired tertiary education qualifications. Assuming your NGO is doing valuable work , you may well be able to draw on them as a second-line problem solving solution.
- If you have a quality-education high school in the neighbourhood, you may find its pupils or teachers available for

6 ID-ten-T errors is technical jargon for the type of problems users encounter where they call a 'computer expert', who then proceeds to solve the problem by pressing three keys or clicking twice. (In case you are wondering, just spell ID 10 T in full... !)

selected jobs. But be mindful about the potential problems or complications: teenagers or self-proclaimed IT experts often have an inflated view of their capabilities (or may just be scared to damage their public image, or too bashful to admit they don't know something) and when you have sensitive information on your systems it may not be wise to expose it to non-professional outsiders.

If you can train your staff locally:

- Make as much use of this as possible. However, internet access will be available and thus you should work very hard on drawing from internet support sources: learn how to surf the internet to find solutions to technical problems, become part of public discussion forums that can assist organisations like yours with technical support or download/subscribe to internet ICT courses.
- Ideally, you may even be able to build a special relationship with one or a few willing and knowledgeable individuals who believe strongly in your NGO's mission and are 'always just an e-mail away'.

3 Level 3: Intermediate

In more developed countries and larger towns, there tend to be a number of alternative IT vendors and stronger, more formal ICT consultant or support options.

- If there is a tertiary educational institution, there is likely to be a continuing infusion of ICT skills into the community, some of which will be advertised in various news media or by means of flyers. You will generally have a choice of support options.

Advice:

Again, when **procuring ICT assets** (hardware, software, or services such as training or design) it is more important to build a longer term relationship than to take the cheapest option. However, the two may not be mutually exclusive: a more expensive option may just indicate someone who is out to rip you off. **The tendency for cash-strapped NGOs is to take the cheapest ICT supplier and ignore the longer term support issues**. If a local and honest vendor can see the benefit of building a long term relationship (ensuring him/her of a longer-term income stream as well) then it would be unwise to ignore the possibilities.

Creative idea:

Check carefully to see if local educational or other institutions have internship requirements or options: often you can get some ICT students to do a specific project in your NGO for the students' credit (or CV) purposes.

4 Level 4: Advanced

If your NGO is large and financially strong enough, when its operations become critically dependent on its ICT infrastructure it is likely to require a more formal arrangement for ICT support. **Typically, multi-tier external support will be formally contracted which will guarantee that certain types of problems will be resolved within specific time frames.** Sometimes, different support contracts will be provided for different needs or applications.

Utilisation of ICTs

Having checked your resources and capacity (infrastructure) for ICT use, it is now time to see how you are actually deploying or using the technology resources at your disposal. **Often organisations have the capacity and the resources but do not deploy them to the fullest extent. This area is where you should focus most of your energy because this is ultimately why you have ICTs; to use them.** However, it will probably be difficult to increase your use level beyond matching the resources and infrastructure levels. Because the questions describe the actual levels fairly accurately, the maturity level descriptions and how to move between them are correspondingly shorter in this section.

This section should be carefully tailored to the nature of your organisation, the type of processes and activities you are engaged in, and, in many cases, the type of technologies that are used by your various stakeholders and constituencies.

Applications

This section looks at some of the typical in-house applications which can be used by an NGO.

- Often, an organisation starts using computers for personal productivity purposes such as word processing, e-mailing or web surfing. These are stand-alone applications.
- The next steps involve the sharing of information using collaborative applications as well as deploying organisational information systems which automate some of the business processes. They often cover functional areas and hopefully, lead to a more efficient of redesign the way things are done; faster, more cost-effective and/or higher quality/better service.
- Eventually, computer use goes beyond the computerisation of existing processes to offer applications which radically transform the organisation, enable it to offer entirely new services or enable internal management processes which were not previously possible or feasible.

Question: Which of the following do you use your computers for? (tick all that apply)

Answers/Scenarios	Level	✓
Typing documents.	1	
Accounting or bookkeeping.	1	
We mostly play solitaire or minesweeper.	1	
Communicating via e-mails.	1	
Editing of photos, video or music.	1	
Creating or giving presentations.	1	
Financial applications (e.g. budgeting or cash management).	2	

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Answers/Scenarios	Level	✓
Storing information about your donors/funders/clients (e.g. personal details, visits, treatments, status, services rendered).	2	
Personnel information for full/part-time employees and/or volunteers.	2	
Digital story-telling. [7]	2	
Inventory control for stock items or assets.	3	
Conducting research.	3	
Calendaring, scheduling, planning (i.e. groupware)	3	
Purchasing or procurement of information.	3	
Sales, billing and invoicing.	3	
Fundraising software.	3	
Design of brochures and publications.	3	
Content-management system for documents and information.	4	
Collaboration software.	4	

Level 1: Non-existent or Basic

Description	Yes	No
Staff use a few key individual personal productivity tools and, possibly, some generic stand alone 'business' software.		
Typical applications are basic word processing, accounting/bookkeeping, calculator, simple spreadsheet, presentations, and possibly some photo editing.		
The computer makes (a few) individuals more productive and professional in their personal information processing tasks.		

Level 2: Early Stages

Description	Yes	No
The computer system is used for its organisational information storage and processing capabilities.		
At this level, electronic information is becoming a resource in its own right and a key asset to the organisation.		
In addition, a number of strategic, professional, sophisticated, novel or high-visibility individual applications may be deployed, such as digital story telling, financial modelling or desktop publishing.		
More advanced use is also made of personal productivity software (such as spreadsheets and word processing) using templates or macros to facilitate shared work, to enforce standards or to increase personal productivity levels further.		

[7] Digital story-telling involves creating short multimedia presentations (usually video and sound) which consist of narratives about certain historical events, persons or aspects of your work. Not only they are highly motivating to the people featured in the story, the end product serves also as a very important historical resource and can often be used as an effective public relations or marketing tool. It is presented here as an illustration of one of many possible innovative uses of ICTs which can be created with as little as a cell phone with camera and some free video-editing software.

Level 3: Intermediate

Description	Yes	No
The organisation is using technology to integrate, streamline or redesign its day-to-day operations (business processes).		
A number of vertical applications (i.e. NGO-specific software) may be deployed. These involve shared (organisation-wide) data stored in a central database and available to multiple users at the same time.		
Other applications that improve the operation and efficiency of the organisation or group work include calendaring and scheduling (of events, meetings, functions, resources), customer/client/member information and contact management ('CRM' or customer-relationship management), and inventory/asset management.		

Level 4: Advanced

Description	Yes	No
Sophisticated organisational information systems are used. Information is becoming a strategic resource and its management a key consideration.		
A lot of emphasis is put on the managerial or strategic decision use of the information contained in the various information systems (aka management information systems, data mining, etc.).		
Information is no longer used only for operational purposes but also to drive decision making and planning.		
Content and document management may be put into place.		
Other potential applications are process or business flow management software, collaboration software, enterprise resource planning (ERP) software (which automates entire functional areas or processes), or project management tools.		

Communication with Stakeholders

One of the key benefits of computerisation and internet connectivity is that the computer becomes a key communication tool. In areas where there is no fixed-line internet but the cell phone company provides data services, your computers can still be used for extensive and exciting possibilities.

Even if your key audience (your clients) generally do not have computer or internet access, you can use YOUR computers to great benefit:

- Bulk SMSs can be created and sent from your computers
- Communication with other stakeholders such as donors and volunteers can happen quicker, cheaper, more effectively and professionally
- You can make substantial savings on some of your other communication channels: international or long-distance phone calls can be made using VOIP technology (think Skype)
- Your computer can be more versatile than a fax machine
- If you have a number of internal telephone lines, setting up a computer-based PABX running on your LAN may be a life saver

Question: Do you have e-mail addresses?
(tick all that apply)

Answers/Scenarios	Level	✓
No, we don't have an e-mail address specifically for our organisation.	1	
We have one or two e-mail addresses for the entire organisation.	2	
We have a few organisational e-mail addresses but not for each staff member.	3	
All staff have their own (work) e-mail address; most also have a personal (private) e-mail address.	4	

Question: Which of the following do you use computers for?
(tick all that apply)

Answers/Scenarios	Level	✓
We do not communicate electronically; all of our communications are by means of typed/printed letters, faxes and telephone calls.	1	
We use our computers for sending and receiving individual e-mails.	2	
Sending bulk e-mail using mailing lists.	2	
We utilise mailing lists to promote our services or offerings.	2	
Sending/receiving documents and files.	2	
Sending faxes electronically from the LAN computers directly via the internet.	2	
Searching information on the Internet (research).	2	
Downloading software.	2	
Sending bulk (low cost) SMS via our computers.	3	
Internet banking.	3	
Purchasing goods or services on the internet .	3	
Accessing government information or filing government forms.	3	
Online chatting (text e.g. MSN, Skype) and instant messaging.	3	
Social networking (e.g. Facebook).	3	
Making long-distance or international phone calls using VOIP (e.g. Skype).	3	
Recruitment of staff or volunteers.	3	
Advocacy/campaigns.	4	
Blogging.	4	
Video-conferencing.	4	
Online education or training.	4	
Newsgroups and discussion forums.	4	

Level 1: Non-existent or Basic

Description	Yes	No
The organisation does NOT communicate electronically with its stakeholders. Any contact is telephonic or by means of written (printed) letters or fax.		
Contact with members is typically through paper handouts, mailings, word-of-mouth or posters.		

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
When you signed up for an Internet Service Provider (ISP), you have the option of requesting (e)mail boxes (sometimes only one, but usually you are allowed 3 to 5). Each mail box is identified using its unique e-mail address, which usually includes the domain of your ISP. If your ISP is, for instance, M-Web, then your default e-mail address may look something like 4231432@mweb.co.za. Instead, request or choose easy-to-remember, unique e-mail addresses that are readily associated with your NGO e.g. your NGO's name (CapeTownAIDS@mweb.co.za, CTAIDSInfo@mweb.co.za etc.).				
Then learn how to use e-mail effectively; how to use your e-mail client (the software program that you use to read and write e-mail, e.g. Outlook), how to organise e-mail folders, how to deal with attachments and multimedia e-mails, e-mail etiquette (writing e-mails uses some very specific words and strange language, but also what one should and should not do with e-mail), effective e-mail use (how long/short e-mails should be, setting filters and rules, using templates, how to use CC, BCC and e-mail signatures), how to recognise and deal with SPAM and typical e-mail scams.				
Another thing to check out is whether you can organise to have electronic fax capabilities on your network, preventing the need to send costly faxes (saving or reducing telephone charges) or even to have a physical fax machine altogether to receive faxes. It also reduces the hassles with keeping and organising paper fax copies. There are some drawbacks to purely electronic fax capabilities since some faxes require physical signatures or other written information which would need to be scanned (but then can also be filed electronically).				
Procedures should be put in place for those risk areas which could either threaten the survival of the organisation, (where the cost of mitigation is less than the expected loss = probability of happening x expected losses) or where the mitigation procedure costs are relatively minor (e.g. sensible password selection and encryption of sensitive data).				

Level 2: Early Stages

Description	Yes	No
There is standard use of e-mail by a few people in the organisation using one or very few organisational accounts.		
Most e-mails are small and individual text messages.		
The e-mail address is typically provided by the Internet Service Provider (NGO@mweb.co.za; NGO@telkom.co.za) or (free) mail provider (e.g. NGO@gmail.com; NGO@yahoo.com) account.		
Electronic messages using standard cell phone technologies are sent (i.e. individual SMSs are sent to individuals or small groups for urgent events using a cell phone).		

Level 3: Intermediate

Description	Yes	No
(Almost) everyone in the organisation has their own e-mail address (either person or role-based) using the NGOs own registered domain (e.g. jim@NGO.org.za or info@NGO.za.org). Refer to the comments under 'Web Presence' for more information on getting your own domain name.		
There is an integration of computer and cell/telephone communication technologies.		
We make regular use of the bulk SMS facility ('SMS bundles') using our computers to communicate with our stakeholders who do not have regular e-mail access.		
We use (any of) our computers (on the network) to send/receive faxes and telex and any other documents electronically.		
The communication via the internet is limited to just e-mail and web access but also for real-time low-cost communication options such as VOIP, IRC etc.		

Level 4: Advanced

Description	Yes	No
The internet is used for all types of communication purposes including multimedia connections (video conferencing, e-learning) and participatory group discussions such as active engagement in discussion forums or regular blogging activities.		

@ Web Presence

Having your own website:

- Provides inspiration to the community
- Is very motivating to the staff (especially if they are featured in name, if not in pictures)
- Is a wise publicrelations move
- It is the prime vehicle for keeping existing funders happy (by keeping them informed as well as giving them visibility), and for attracting new funding
- Informs your community and the media and publicises your activities to new potential members or users

Creating and hosting a website used to be a very technical job. However, these days it is much easier than you think because many tools and a lot of resources have been created to facilitate the process. But creating an attractive website still requires some dedicated resources (including some creativity and inspiration). Keeping it updated and relevant also requires some discipline and motivation. Remember that a good website is not the responsibility of one person (such as the fundraiser or manager). Ideally many staff are involved with the planning and content creation – the more staff you involve, the greater their motivation and the better your website.

@ ? Question: Does your organisation have a web presence?
(tick all that apply)

Answers/Scenarios	Level	✓
Our NGO name appears on some websites, usually listings or directory pages, possibly with a short description of what we do and some contact details.	1	
We have a simple website consisting of a few pages with the essential information.	2	
We have an attractive, extensive and detailed website, which is updated regularly and accessed using our own NGO-specific domain name.[9]	3	
We have a professionally designed website with a number of interactive features (e.g. blog, signup, member areas, events calendar, discussion forums). It is regularly updated by staff and possibly automatically from selected content on our internal network.	4	

@ 1 Level 1: Non-existent or Basic

Description	Yes	No
The organisation has no web presence, or at most it is listed in a single-paragraph/page listing in some (national or international) directory of NGOs/organisations that are active in a particular area.		

9 A famous internet cartoon about two old, ugly, chair-bound people, each sitting at their computers messaging each other via a dating website, describing themselves to each other as active, sporty, beautiful, sexy youngsters. The lesson here is that the internet is the greatest leveller of them all: on the internet a tiny organisation with a nice website can project a better, more professional image (especially if they respond promptly to electronic communications) than a large company that doesn't have a properly designed website.

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Decide who you want to target with your website (members, existing or potential funders, the local or national community, potential volunteers, governance bodies). You usually want to target several if not all of these audiences but use different pages (information content) for each of them. Prepare content specifically targeted at each of these. Often you can re-use existing information found in brochures, information leaflets, press releases and media articles, fundraising proposals, financial statements etc.				
Look at existing websites – especially from organisations that work in the same or a similar area as you do.				
Feel free to steal ideas (what information and how to present it) but do not copy content.				
Decide on web hosting (or web presence) provider – preferably use one that has a fill-in-the-blanks template option.				
A good option is to use a reputable but cost-effective local web design company – apart from keeping the money within your local community, it also gives you the option to set up a longer-term relationship for moving up to the next levels.				
Now may already be the time to start thinking about finding and registering your own domain name which is a key success factor in developing your own brand and having your website linked to by others. A domain name is usually based on your organisation's full or abbreviated name. Take a look at the domain names of other NGOs to get an idea of the possibilities.				
Use a local (NGO.org.za) domain if you operate in one country and all or most of your stakeholders are local. If you desire international exposure or have long-term plans for an international expansion, you may opt for an international domain (NGO.org). It is likely that your desired international domain name is not available (all the good names have already been taken), in which case you will need to use some creativity. Note that free domains are sometimes possible, e.g. NGO.za.org.				
Registering your own domain is not very expensive and you do not have to use it immediately. For instance, South African NGOs can register a 'org.za' domain for free but you need to prove that you are an NGO (just visit www.org.za for more information). '.org.za' is the 'official' not-for-profit domain.				
It is even easier and quicker to get a '.za.org' address (check www.za.org) although it is and looks 'less official'. NGOs in other countries will need to look at their own countries' domain registrar's rules or can consider using an 'international' .org address.				

Some web resources for setting up your own webpage:

If it's just a small site with one or a few pages that you're after, then the easiest and quickest way is to use http://sites.google.com or a similar free web-hosting site (there are some organisations that give NGOs in Africa free web space). If you want to learn more details or do something more advanced, then there are many tutorials on how to get started with your website.

Check out a few of the following just to see which one's writing style you like the most:

- The Beginner's A-Z Guide to Starting/Creating Your Own Website – the essential step by step guide/overview to starting your website: http://www.thesitewizard.com/gettingstarted/startwebsite.shtml
- Where beginners learn to create websites: http://www.2createawebsite.com/ebook/websitetutorial.pdf
- Wanda Wigglebits welcomes you to her guide for Building a School Web Site - at a kiddies level but you can also use the info for other websites: http://www.wigglebits.com/
- Learn to build your own site, promote and monetize it: http://biyw.com.
- Only eight simple lessons and you will be designing websites quickly: http://www.how-to-build-websites.com/
- A nice step-by-step tutorial (10 steps): http://www.websiteinfodesign.com
- W3schools is a very thorough but rather technical tutorial: http://www.w3schools.com/Site
- Make your own website guide: http://www.makeyourownwebsiteguide.com
- The Two Hour Web Site - Build It in Microsoft Word 2003: http://www.informit.com/articles/article.aspx?p=391847
- Creating a web site: http://www.wikihow.com/Make-a-Website, http://www.wikihow.com/Create-a-Website and http://www.wikihow.com/Create-a-Free-Website
- More commercial resources:
  - http://www.4creatingawebsite.com/
  - http://www.allaboutyourownwebsite.com/
  - http://www.build-your-website.co.uk/

@ 2 Level 2: Early Stages

Description	Yes	No
You have a simple website consisting of a few pages. It presents the basic information on your NGO including its mission, contact details, some operational information, some pertinent media articles and related information and sponsorship details (usually linking through to your sponsors' website).		
Your website is hosted on a generic (i.e. cheap) host, possibly as part of your ISP package.		
Alternatively, it is hosted on a free web-hosting facility which uses advertising to pay for the hosting or it is a service by an NGO-promoting organisation.		

Move to the Next Level

Actions	Not possible (give a reason why)	Possible (tick where applicable)		
		Short term	Medium term	Long term
Have a brainstorm in a facilitated group session on the overall web design and content after starting with an informed briefing on what websites are and how they can benefit the organisation. Ideally this briefing includes a demonstration of some successful 'competitor's' websites. If you haven't chosen a domain name yet (or if you are unhappy with it), this is a good opportunity to select and register one.				
After agreeing on the content (which should be based on the different stakeholder groups which the website intends to target), you assign the initial data/content collection (or creation) to individual staff members.				
Assign the web maintenance responsibility to one or two staff members. Ensure that they receive the necessary training on how to maintain the website but also ensure that the necessary information (e.g. new media articles, current and planned events, news items, updated financial statements) is channelled to them on a regular basis.				
Consider outsourcing the initial website development and training but ensure that the developers are using tools which are compatible with (or the same as) those available in-house for the staff responsible with updating the website. Ideally the same party can provide the necessary training to your staff.				

@ 3 Level 3: Intermediate

Description	Yes	No
The organisation has a multilevel, detailed website. Although it still consists mostly of static information, it is updated regularly (more than 10 times per year) with news items (or a newsletter), events (past and future), FAQ (Frequently Asked Questions) about the organisation and its activities), staff profiles (it's important to include their pictures), favourable news media reports (best if they feature the organisation but, if that's not possible, reports that highlight the need for the NGO's existence), financial statements, more detailed operational reports etc.		
The website is hosted on a reliable server using the organisation's own domain. The site has a clearly identified audience with specific pages targeted at each of the stakeholders or interested parties (e.g. potential members, donors, media, community, government and other stakeholders).		
There is a likely to be a 'sign-up option' for members, a means to subscribe to a regular newsletter (or at least be informed of important events), and possibly an online query or information form which can ideally also be used for donation enquiries.		
At least one staff member has website maintenance and update as part of their job responsibility (the web master) but there is some redundancy in skills so that someone could take over at short notice or in case of emergency.		
Continued skills training is happening.		
There are feedback sessions to the NGO executive on a regular basis on issues such as the web visibility, issues, content and traffic analysis.		

Move to the Next Level

Acquiring the skills needed to build a professional, dynamic website using in-house staff is not really a cost-effective strategy. Unless your organisation is very large, it may be best to outsource the initial development of the website to a contractor, but specify that you wish to have the tools and skills training required to maintain the website using internal staff (unless you also want to out-source the website maintenance). It is advisable to get expert advice on where to host the website, what platform and tools should be used, how the site should be advertised and how to keep statistics about who visits your site (and how they navigate it).

Level 4: Advanced

Description	Yes	No
The organisation has an attractive, dynamic and comprehensive website, usually including some custom development.		
It includes interactive or Web 2.0 elements such as a blog (usually set up by an executive staff member, a creative muse in the organisation or the web master), a discussion forum for stakeholders, a dedicated members area (e.g. where they can sign up, update their details, find detailed information), a specific donors space (with details, links, and other exposure elements), and a short-term events listing (i.e. updated regularly).		
Importantly, there may be a donations section for (new) online donations by visitors (if applicable and legal) or 'shop' options (e.g. where the NGO could sell community products or NGO-branded memorabilia).		
The website is integrated with the organisation's internal document management system and intranet (i.e. automatic content generation).		
The organisation does regular traffic analysis: who visits the site, where do they come from, which pages do they view and in which order.		
There is careful visibility management of the website (e.g. the pro-active listing on search engines and links management from relevant associated pages – those of stakeholders, NGO-umbrella organisations or other public forums – to the organisation's website).		
The website could be operationally managed and maintained by internal staff although specific web development or technical issues are likely to be outsourced.		

Conclusion

We hope you have found this self-assessment tool valuable, and that it will be an ongoing resource for your organisation as it continues to grow through its more effective utlisation of ICTs. As with technology itself, this tool is a living document. As technology changes and with your feedback, we will endeavour to keep this document updated. We value your feedback, and should you wish to provide us with suggestions for improvement or change, please contact us at http://www.ngoconnectafrcia.org or e-mail info@ngoconnectafrica.org.

NGOConnect Africa Team

Glossary

ADSL (Asymmetric Digital Subscriber Line):

The most common form of DSL, a broadband internet access method which provides a high-bandwidth internet connection using an existing fixed-line telephone. Unfortunately, this is only available if your telecommunications provider has installed special equipment in what has to be an electronic telephone exchange and you live within a fairly short distance (no more than 3 or so kilometres) from that exchange. In practice, this is only available in a number of metropolitan areas.

Backup:

A copy of data/information. It is essential that a backup is made on a regular basis and kept in a safe place. If all computers are stolen or physical damage happens to your building, chances are high that your backup will also disappear if it is stored in the same building. Usually cost-effective backups can be done using removable data storage devices such as a portable hard drive. It is important to have a nice, easy-to-use software system that automates the backup procedure or else staff members are likely to skip, forget or ignore backup procedures and guidelines. Remember that, despite the general reliability and robustness of computer technology, it is not an issue of whether or not you will ever lose your data: it is a matter of WHEN. You are guaranteed to lose data some time in the foreseeable future and, unlike hardware which can easily be replaced, it is virtually impossible to reconstruct large amounts of data when lost. Equally important is to check occasionally to see if the backup can be restored. One known company backed up all its data every Friday for many years. Eventually a disaster happened and when they wanted to restore the data, they discovered that no actual data had ever been saved on the backup device due to an incorrect software option setting.

CRM (Customer Relationship Management System):

A software solution that manages the relationships of a business with its clients or customers. This includes not only invoicing but also quotations, sales management, marketing and information exchange.

Dial-up (internet access):

A type of internet access whereby your computer modem connects using your fixed telephone line. Technically, it converts the electronic information into sound and transmits it like a normal voice telephone conversation so, unlike ADSL or ISDN, your telephone line is unavailable for voice calls. Its main advantage is that it is an old established technology that can work over any telephone line over any distance so it can be used in rural areas where no digital internet access is available. However, it is relatively limited in its transmission capacity and anything that is not text-based is likely to be transmitted quite slowly: it is practically unusable for movie or video information and large files, including high resolution pictures, mp3s or computer program downloads. In addition, rural areas often have noisy telephone lines which downgrade the transmission capability even further.

ERP (Enterprise Resource Planning System):

This is a comprehensive software package that aims to automate all or most of the information-based business processes which are common to most businesses. Typical modules include human resources management, financial management, cost accounting, logistics management, purchasing and suppliers management, sales and invoicing, production and inventory management. Most ERP systems are very large and expensive, even if one elects to adopt only a few selected modules. Because they generally used a ‘best-practices’ approach, they are also difficult to install because many businesses have to change their current business processes to fit in with the ERP processes. However,

ERP vendors are trying to develop smaller solutions aimed at the medium-sized businesses. Well-known but large ERP systems are mySAP, Baan, PeopleSoft, Great Plains and Compiere.

e-Readiness:

The degree to which an organisation (or community or country) is prepared and ready to engage in electronic communication via the internet and thus participate in the global knowledge economy. This presupposes that the organisation (or country) is ICT-ready (i.e. it must possess the necessary ICT infrastructure or resources as a platform to engage from).

Ethernet:

The most popular network standard because of its cheap components, support by all operating systems, robustness, high performance and easy installation. Most computers have the required connection already built-in. The cabling is relatively cheap and all that is required to connect a small number of PCs together is a relatively cheap hub.

GPRS (General Packet Radio Service):

A packet-oriented mobile data service available to users of the 2G cellular communication systems global system for mobile communications (GSM), as well as in the 3G systems. In the 2G systems, GPRS provides data rates of 56-114 kbit/s.

ICT (Information and Communication Technologies):

Any computer-based technologies used for digital information manipulation and communication. Technically, this also includes telephone, fax and similar technologies. In this document, we concentrate on computer technologies although we realise that the use of and integration with mobile cell phone technologies is one of the greatest computing opportunities in Africa. Sometimes 'IT' (Information Technology) is used to refer to the computer-related technologies and 'IS' (Information Systems) to the combination of computer-based systems (this includes the software applications as well as data and human resources).

Internet:

The global computer network for sharing information. Although technically it is based on a number of specific technical standards (such as TCP/IP), it is known to users because of the most common applications: e-mail (the sending of electronic messages using an application such as Outlook) and 'the web' (or World-Wide Web), a vast repository of publicly available multimedia information (typically on websites consisting of pages with text, images, sound etc.) which is 'surfed' or accessed using a web browser. E-mail messages are sent to and from individual users using e-mail addresses (e.g. Jean-Paul.VanBelle@uct.ac.za) whereas web pages are accessed using location addresses better known as URLs (e.g. www.organisation.org). Many other types of applications are supported on the internet including file sharing, voice telephony (VOIP), music and video streaming (broadcasting of sound or video) etc. Organisations provide access from a single computer or their entire network to the internet by means of an ISP.

IP (Internet Protocol):

A protocol used for communicating data across a packet-switched internet work using the Internet Protocol Suite, also referred to as TCP/IP.(Wikipedia)

IRC (Internet Relay Chat):

A form of real-time internet chat or synchronous conferencing. It is mainly designed for group communication in discussion forums called channels, but also allows one-to-one communication via private message, as well as chat and data transfers via Direct Client-to-Client. (Wikepedia)

ISP (Internet Service Provider):

An organisation (usually for-profit) that provides internet access privileges. Generally, your public telecommunication company (fixed line or cell phone) provides you with the physical connection to the internet but you still need to have the data and software resources to access and make use of the internet. This includes an internet address, internet gateway (which channels the web data streams), and normally also an e-mail 'post office' where your e-mails are sent from/received to. Depending on the type of access, the amount of internet traffic, the number of e-mail boxes and other services provided (e.g. website space), you will be charged different rates. There is normally an initial connection fee (sometimes this includes the necessary hardware to connect e.g. the modem) and a monthly charge (usually fixed, sometimes with a variable portion based on the amount of data used). Some ISPs require you to sign up for a minimum contract period – usually when they provide a modem. In addition, you are likely to have to pay your public telecommunications provider an increased monthly rental and installation fee.

ISDN (Integrated Services Digital Network):

A separate fixed-line data connection provided by the telecommunications company which allows telephone and data traffic. It is an older technology and usually more expensive than ADSL but has a few benefits and may be available in some areas where no ADSL is provided.

Internet domain name:

On the internet, resources need to be identified uniquely. One such system which is people-readable is by means of domain names: it helps people to remember URLs (addresses of web pages) and e-mail addresses. A domain name typically identifies the type of organisation, its nationality and its name. For example, uct.ac.za is the domain name for the University of Cape Town ('uct') which is an academic institution ('ac') located in South Africa ('za'). International or US-based domains generally do not have a country-code (e.g. amazon.com). Domain names can be 'owned' by specific organisations who must first check to see if their preferred domain is still available (many of the good and short ones have already been taken) and can then 'register' it for their own use by means of a relatively small annual registration fee. A local NGO is likely to register a country-specific domain whereas an internationally operating organisation can register an international domain. Once you have acquired a domain, you still need to contract a service provider who will actually 'host' the information (web space or e-mail storage space) and allow access (traffic) for your domain.

LAN (Local Area Network):

A network connecting computers in relatively close proximity, usually within one building and a single organisation.

MAC (Media Access Control):

Data communication protocol sub-layer, also known as the Medium Access Control provides addressing and channel access control mechanisms that make it possible for several terminals or network nodes to communicate within a multipoint network, typically a local area network (LAN) or metropolitan area network (MAN).

NAS (Network Attached Storage):

Computer data storage connected to a network. This way the storage can be shared among the computers on the network.

NGOs (Non-Government Organisations):

Here used in the sense of a not-for-profit organisation which is engaged in an activity promoting the public interest. Obviously this tool can also be used by other organisations (sports organisations and churches) so there is no real need to distinguish between NGOs, NPOs (Not-for-Profit Organisations) or CBOs (Community-Based Organisations) although their differences are acknowledged.

OSS (Open-source software):

Computer software whereby the source code (the human-readable version of the computer instructions) is made available free of charge, can be modified and shared under certain conditions. Typically this also means that you can use (and customise) the software without incurring any license costs. Most computer needs can now be fulfilled using OSS. Many variants of the Linux operating system (e.g. the Ubuntu, Red Hat and Debian distributions) and most applications for the Windows operating system e.g. Firefox (a popular web browser similar to Internet Explorer), OpenOffice (productive suite similar to Microsoft Office), Apache (the most widely used web server), mySQL (relational database), and of course many games, utilities and development platforms are also available.

P2P (Peer-to-peer network):

A network whereby the networked computers share information and devices directly with each other instead of being connected to a more powerful central server computer.

RAM (Random Access Memory) or main memory:

The memory inside the computer where the active computer programs and information which is being worked upon resides. When the computer is switched off, all information in RAM is lost so applications are loaded from and data must be saved to (or retrieved from) secondary storage, usually the hard disk or CD-Rom. When your computer is becoming less responsive or slower, often it can be sped up most significantly and cheaply by adding additional RAM.

SAN (Storage Area Network):

Remote data storage devices similar to NAS, but appear to be locally attached to the utilising computers. Still not common outside larger enterprises.

Uninterruptible Power Supply (UPS):

A standby battery which can power computers for a short while (usually less than two hours) when the main electricity supply fails. It is highly recommended whenever mains power is unreliable because not only do you have business continuity but it also protects the computer hardware and prevents data loss. If mains power is an issue, consider laptop computers which have battery power built in.

Virtualisation:

An approach whereby different software systems are being run on a single hardware platform for efficiency, cost or management reasons. An example of systems virtualisation is where several virtual web servers (each with their own applications and operating system) may reside on the same physical (rather powerful) computer using the appropriate virtualisation operating system software (e.g. VMware, VirtualBox or Zen). In this way, the IT staff members only has to manage one or a very few physical computers and it is much easier to do capacity planning, upgrading or system migration. Another typical application is storage virtualisation which consolidates all the disparate storage requirements of an organisation using one single managed storage solution.

VOIP (Voice Over Internet Protocol):

A general term for a family of transmission technologies for delivery of voice communications over IP networks such as the internet or other packet-switched networks. Other terms frequently encountered and synonymous with VoIP are IP telephony, internet telephony, voice-over broadband (VoBB), broadband telephony, and broadband phone. (Wikipedia)

WEP (Wired Equivalency Privacy):

A basic security protocol for wireless networking. See also WPA.

WiFi:

A networking method which uses no cables but instead connects the computers using radio frequency transmissions. It requires a central WiFi hub to coordinate all the network communications (this usually also functions as a router and modem which can connect the network to the internet) and each desktop computer must have a wireless card. Most laptop computers have built-in support for WiFi.

WiMax (Worldwide Interoperability for Microwave Access):

A telecommunications technology that provides wireless transmission of data using a variety of transmission modes, from point-to-multipoint links to portable and fully mobile internet access.

WPA (WiFi Protected Access):

A security encryption protocol for wireless networking. It provides better security than WEP (see above.) There are two versions: WPA and WPA2, the latter being better. There is also a Pre Shared Key (PSK) Mode which allows small offices and homes to implement security without complexity.

Note

For other terms and more information please visit Wikipedia (wikipedia.org) online.

Some Must-Check Resources

For very nice, non-technical and beautifully illustrated explanations on how the various ICTs work (including many articles on hardware, software, security and the internet) your first call should be the How-Stuff-Works website: http://computer.howstuffworks.com/ (Note that all their articles contain copyrights.)

A great website with short text articles illustrating how to do or achieve certain computer tasks, is WikiHow. Its computer section (http://www.wikihow.com/Category:Computers-and-Electronics) has several hundreds of short 'how-to' articles on various computer aspects. It may take some time to browse the various sub-categories (e.g. http://www.wikihow.com/Category:Hardware or http://www.wikihow.com/Category:Networking) All articles here are available under the Creative Commons license).

A must-read publication is the *Guide to Managing ICT in the Voluntary and Community Sector*. A copy is available for download from http://www.icthub.org.uk/publications/ under the Creative Commons license. The ICT hub has some other very interesting and applicable publications available from their website such as *Charitable Giving and Fundraising in a Digital World, A Guide to Managing ICT in the Voluntary and Community Sector, ICT Signposting guide* for small voluntary and community organisations and *How Online Communities can make the Net Work for the Voluntary and Community Sector*.

There are a number of other e-readiness instruments and surveys available on the internet. Here is a selection of the better ones:

- ICT Health Check Self-Assessment Form (from the CLIO Black Country Program) is a very nice 14-page self-assessment instrument which classifies question answers into 3 maturity levels. However it is biased towards larger organisations. It is derived from the LASA ICT Health Check List.
  Available from http://clio-black-country.com/downloads/Acrobat_Files/CUBC_ICT_Self_Assessment_Form.pdf
- The CSPP Readiness Guide for living in the networked World is a self-assessment tool for communities from Harvard. It uses a 4-stage (maturity levels) self-assessment but is limited to networking aspects. It is very much geared to first-world environments and the boundary conditions (e.g. 25%-50%) for the various stages appear rather arbitrary.
  Available: http://www.cspp.org/documents/NW_Readiness_Guide.pdf
- The Digital Divide Assessment of the City of Cape Town (2002) is available from www.Bridges.Org. The report contains two questionnaires in the appendices, one for Cape Town individuals and one for organisations. The second one formed the basis for the study on Computer Use in NPOs in the Western Cape (Vosloo and Van Belle, 2006) which was based on a 6-page questionnaire derived from Bridges.org's but expanded substantially and customised for NGOs.
  The full study is available from http://www.molotech.org.za/wp-content/uploads/2006/07/molotech_research_npo_ereadiness_sep2004.doc and a summarised version from http://www.commerce.uct.ac.za/InformationSystems/staff/personalpages/jvbelle/pubs/CIRN05%20SV%20JP%20EReadiness%20NGOs.pdf
- The Eurostat model for a Community Survey on ICT Usage and e-Commerce in Enterprises is a 6-page, very well designed questionnaire with 4 pages of ICT definitions at end. Meant as a model to be customised by European countries as input for Eurostat statistics. The first few pages are interesting and very useful but the last few are very focussed on B2B E-commerce.
  http://europa.eu/estatref/info/sdds/en/isoc/isoc_entr_ict_usage_2008_questionnaire.pdf
- ICTs for SMMEs (Van Belle Mpye Osman, 2007) is a report based on a 5-page questionnaire and interview questions for SMMEs in Cape Town. It is quite useful though somewhat basic. It looked at basic communications and computer needs (i.e. it was specifically geared towards an LDC context/environment). Some of the questions were based on a Belgian and Dutch research program.

Some other interesting resources from the ICT Hub to get you started:

- Give your ICT a health check
  You should be reviewing the way in which you manage ICT and prepare a range of comprehensive checklists to ensure you are on track. Here's how: www.icthubknowledgebase.org.uk/healthchecklists
- How to choose, buy and replace ICT
  Need a strategy for buying, owning and disposing of ICT equipment? Yes! It's available from: www.icthubknowledgebase.org.uk/buyingowninghardware
- Carry out a risk assessment to ensure you have identified and potential risks with your ICT: www.icthubknowledgebase.org.uk/riskassessment
- Take control of e-mail
  There are many issues to consider when using the Internet for communications – e-mail, instant messaging and Internet telephony: www.icthubknowledgebase.org.uk/e-mailcommunicationservices
- Your website
  When you develop a website for your organisation, there are many issues you need to consider. The following resource is a comprehensive introduction to what you need to think about: www.icthubknowledgebase.org.uk/yourwebsite
- New media, new ideas
  From blogs to wikis, from MySpace to YouTube. How can you make the most of the free publishing tools available? www.mediatrust.org/new_media/index.php

Developing projects with volunteers:

You may know what you want to do but not know how or where to start. Volunteers are excellent at supporting you on projects, providing ideas and advice and developing simple websites and databases. They can even help you identify consultants. A great source of ICT and new media volunteers can be found at: www.it4communities.org.uk (for volunteers who can help you think things through) and www.mediatrust.org (providing access to media professionals and resources).

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