Fiscal Management

Grant Writing

Strategic Planning

Needs Assessment

Program Development

Technology Development

Human Resources

Volunteer Management

Surviving an Audit

Program Evaluation

Board Development

Faith-Based Leadership Development

Starting a Nonprofit

Leadership Development

TECHNOLOGY DEVELOPMENT

NATIONAL MINORITY AIDS COUNCIL

Dear Colleague,

On behalf of the National Minority AIDS Council, thank you for picking up this manual and taking a step toward increasing your capacity in this struggle. As we enter the third decade of HIV/AIDS, it is more important than ever to develop our skills and knowledge to better serve our communities and our constituents.

NMAC, established in 1987 as the premier national organization dedicated to developing leadership within communities of color to address the challenge of HIV/AIDS, recognizes the challenge before all of us and works to proactively produce and provide skills-building tools to our community. One such tool is the manual that you hold in your hands.

The Technical Assistance and Training Division's mission to build the capacity and strength of community-based organizations, community planning groups for HIV prevention and health departments throughout the United States and its territories is supported though a multifaceted approach. This approach includes individualized capacity-building assistance, written information (manuals, publications, and information provided through NMAC's website and broadcast e-mail messages), and interactive learning experiences (trainings). All components are integral to providing a comprehensive capacity-building experience, as opposed to offering isolated instances or random episodes of assistance.

After undergoing a revision of existing curricula and publications, and an expansion of our current catalog of subject areas to include more organization infrastructure topics, NMAC is proud to present you with this new manual, Technology Development. One of 15 topic areas in which we provide capacity-building assistance, this manual will provide you with detailed information, resources and the knowledge to enhance your capacity to provide much-needed services in your community.

Our hope is that this revised manual will give you the skills and knowledge to increase your capacity and serve your community at a greater level than ever before. Please feel free to contact us if you would like further information on other services we can provide to you and your community.

Yours in the struggle,

Paul Akio Kawata
Executive Director

Contents

Preface

Organizational Effectiveness

Successful community-based organizations (CBOs) can attribute their success to employing 15 key components that support organizational effectiveness. See the model below.

Ongoing learning and training in each of these areas will allow your organization to meet the needs of your constituents.

For information regarding training in any of these areas, contact the National Minority AIDS Council's Technical Assistance, Training and Treatment Division by telephone at (202) 234-5120 or by e-mail at ta_info@nmac.org.

ORGANIZATIONAL EFFECTIVENESS MODEL

Organizational Effectiveness

Board Development
Faith-Based Leadership Development
Fiscal Management
Grant Writing
HIV Prevention Community Planning
Human Resources
Leadership Development
Needs Assessment
Program Development
Program Evaluation
Starting a Nonprofit
Strategic Planning
Surviving an Audit
Technology Development
Volunteer Management

Introduction

Purpose

This manual is targeted toward the nonprofit organization (NPO). For most, if not all NPOs, starting or expanding a program is likely to involve the purchase and use of technology. The purpose of this manual is to:

✓ Present the fundamentals of technology acquisition and implementation.
✓ Identify some of the various technology options that are available.
✓ Recommend proper maintenance practices and information.
✓ Present an overall understanding of technology and the parts of technology that apply to your agency.

Learning Objectives:

Upon completion of this manual, you will be able to:

✓ Differentiate between the main types of technology and their terminology.
✓ Properly articulate and assess your organization's technology needs.
✓ Differentiate between a network and a Web-based solution and then, based on re-sources, identify the best solution for your agency.
✓ Properly assess the technical skill level of agency staff and determine their training needs.
✓ Develop a technology plan that covers the agency's goals and objectives.
✓ Identify the proper technology assistance for your agency.
✓ Perform a basic screening of technology consultants.
✓ Know where to look for funding to help pay for new technology.

Pre-training Assessment

The Pre-training Assessment on the next page is an opportunity for you to check your knowledge against the information contained in this manual. Check you answers on page 87 now and again after you finish reading the manual.

Pre-training Assessment

Please circle True or False for the following statements.

1. **True** **False** Technology is the application of science, especially toward industrial or commercial objectives, and/or the scientific method and material used to achieve a commercial or industrial objective.

2. **True** **False** Reduction in the time required to perform activities is a benefit of implementing technology.

3. **True** **False** Frequent changes in technologies are a drawback of implementing technology.

4. **True** **False** A network is another term for a T.V. station.

5. **True** **False** Training is important because it raises the cumulative level of your team.

6. **True** **False** A file server is a server that stores files.

7. **True** **False** It is important for your agency to have a business plan.

8. **True** **False** It is not necessary to maintain your equipment.

9. **True** **False** Microsoft Access is a database management tool.

10. **True** **False** Adobe Acrobat is used for document creation and to share documents over the Web.

11. **True** **False** It is okay to send a document to your funders in a format that is incompatible with their application.

12. **True** **False** It is important to have a budget because it is a mark of coolness.

13. **True** **False** A project should be broken out by phases to help track a project's progress and identify completed tasks.

14. **True** **False** If someone had a large business and had to implement a network, she would choose the peer-to-peer network type.

15. **True** **False** Microsoft Excel is a word-processing application.

16. **True** **False** A website is good to have because it establishes an organization's presence on the World Wide Web and helps you reach a large audience.

17. **True** **False** One of the advantages of Web-based technology is the ease of access it offers to information.

18. **True** **False** Another characteristic of Web technology is that it makes a client's application vulnerable to security breaches.

Check your answers on page 87.

UNIT 1:

Technology

Learning Objectives:

By the end of this unit, learners will be able to:

✓ Define technology.

✓ Identify fundamental technology terminology.

✓ State the many uses, benefits and drawbacks of implementing technology.

I. Introduction

The purpose of this manual is to present the fundamentals of technology in the areas of acquisition, implementation, options and safe practices. This manual will also help you understand current technology and which technologies would be useful for your organization.

II. Brief Overview

What is technology? The dictionary defines it as "the application of science, especially to industrial or commercial objectives and/or the scientific method and material used to achieve a commercial or industrial objective." (www.dictionary.com) In a business and organizational environment, technology is the application and use of computers, the Web and other computer-based applications. Businesses, in one way or another, have always implemented technological advances to assist in daily operations. Business and industry discovered early on that the proper application of technology leads to a more efficient, effective and thus more productive workforce. The introduction of computers within the past 30 years and, more recently, the development of the Internet have caused and assisted with more advancements than any other prior technology. (For more information on the technology timeline, see the referenced article in the bibliography.)

III. Computer Terminology

A common challenge technology raises is not how to use or implement it, but rather how to understand and process the information provided by high-priced technical sales people. For example, a consultant may recommend a "LAN/WAN implementation with a VPN connection using Cisco routers and Watchguard firewalls with the IP addresses and frame relay provided by Sprint." The consultant adds that the machine needs a "P4 with a 1.8 gigahertz processor, 256MB RAM and a 20-gig hard drive running Windows and Office XP." (If these terms are foreign to you, please refer to the glossary in Appendix A.)

Some of the basic terms used throughout this manual are:

✓ **PC:** Personal computer, e.g., a Dell desktop computer, a Compaq desktop computer.
✓ **Network:** A connection of two or more PCs and/or other equipment such as printers or copiers.
✓ **Internet:** A global collection of networks that form a single entity. The name stems from the idea of interconnected networks.
✓ **Server:** A machine that is used to host one or more networks and allow communication among them as well as with the Internet.
✓ **Terminal:** A generic term for a computer, whether a PC or a server.
✓ **E-mail:** Short for electronic mail, this is a technology that allows you to send and receive data from one PC to another through a mail delivery protocol.

When a client comes to a nonprofit agency seeking information, the task of the staff is to educate that client using the latest information available. It is no different for questions about technology. If anything, technology requires more ongoing education to keep people literate as it continues to advance and change.

IV. Uses and Benefits for Organizations

Once you have a general idea of what technology is and understand some of the technol-ogy jargon, you can turn to learning the basics of what you need to know to make a pur-chase. How will the agency save money or at least stretch its existing budget dollars if we purchase this technology? How will it benefit my organization? From an agency that is just opening its doors to one that wants to automate current processes to an agency that wants to upgrade after a few years of operation, understanding computer technology in one form or another is almost mandatory.

The main areas of computer technology you should consider before you make a pur-chase are Web-based technologies, Network-based technologies and the general equip-ment and services that go along with a technologically sound set-up. As with any other decision about a major purchase, you should consider the pros and cons of implementing technology.

Here are a few advantages of purchasing new computer technology:

✓ Reduction in the number of staff required to perform activities.
✓ Reduction in the amount of time required to perform activities.
✓ Reduction in costs for repetitive tasks, such as frequent distributions and mailings.
✓ Increased staff productivity.
✓ More efficient and effective operations.
✓ Streamlined information distribution (e-mail, Internet, fax).
✓ Better accessibility to information distribution (Internet, network).

Drawbacks include:

✓ Potentially high initial cost to purchase and set up the technology.
✓ Time needed to learn to use a new technology.
✓ Cost of classes or training.
✓ Frequent changes in technology continually make current systems and networks obsolete.

UNIT 2:

Networks

Learning Objectives:

By the end of this unit, learners will be able to:

✓ Describe what a network is and identify the most common types of networks.

✓ List some of the uses of networks and how organizations can apply them.

✓ Identify situations in which one type of network would be preferred over another.

✓ List the advantages and disadvantages of using networks.

✓ Fill out the network assessment worksheet at the end of this module to help plan the set-up of a new network or upgrade an existing one.

I. Description of Networks

In very basic terms, a computer network is a collection of computers, printers and other peripherals that share information and resources with each other over a local-area network (LAN), wide-area network (WAN) or metropolitan-area network (MAN). The computer network performs a function similar to human networking, where people from many areas and levels of expertise meet and exchange information.

Networking is the connecting together of PCs, printers, scanners, copiers and other hardware. There are various methods of doing this: peer-to-peer, client/server and mainframes, which serve dumb terminals. These PCs and peripherals can be connected through special cables and using what is known as "adapters" or "baluns."

II. Uses of Networks

As an organization grows, its need for more computers and other machines that are connected to each other grows as well to keep up with the more complex level of operations.

Networks have many uses:

✓ Sharing printers, copiers, fax machines, phone systems and scanners, which creates economies of scale and streamlines management.
✓ Sharing data, which is necessary when more than one person needs access to the same information.
✓ Providing additional security of data and proprietary organizational information.
✓ When implemented with a file server, providing data back-up and centralized data collection and management, which are critical in the event of a disaster or loss of information.

The full implementation of a network includes e-mail and Internet access. E-mail, whether for internal-only messaging or external communication, makes communications cheaper and quicker and helps speed up other activities as well. E-mail is now considered a legally binding form of communication for contracts and other business transactions, and printed e-mails are often used in a court of law as a legal source of information.

III. Advantages and Disadvantages of Networks

When implemented properly, a robust, functional network, informative and interactive website, or just the proper application of technology in one form or another can help reduce operating costs and boost productivity. Other advantages include:

- ✓ Improved communication
- ✓ Data sharing
- ✓ Central management
- ✓ New technology
- ✓ Increase in productivity

   But networks have disadvantages too, including:

- ✓ Initial cost
- ✓ Maintenance costs
- ✓ New technology costs
- ✓ Learning curve

IV. Types of Networks

As with any evolving technology, there are now many different versions of networks. Earlier inefficient set-ups have given way to more robust and easily upgraded versions. Networks are now able to free up some of the burden on one computer by providing other computers that can take on large jobs. Networked computers can link to each other with a set-up as simple as cables and cards and connect to each other regardless of proximity. When physical proximity exists, a local-area network is effective. When distance is an issue, a wide-area network is recommended. A wide-area network connects over phone lines, most often using broadband Internet access.

   Peer-to-peer and client/server networks are two of the most important types.

A. Peer-to-Peer

Peer-to-peer networking is usually found in small offices, shops and even in private homes. It allows PCs to access information, which is kept on any of the machines connected to the network, and print to any of the printers on the network. This can become impractical, however, when the number of machines or the amount of traffic on the network starts to slow the speed with which information can be accessed.

In a peer-to-peer network, two or more computers share the same resources — printers, Internet connections and files, to name a few — and application layers. One computer may handle all the print jobs while the other computer may store and retrieve files.

Since both computers handle a part of the resources, both are called servers. And because the resources are split up between the two, one computer may be running the presentation layer and application logic of a program, while the other may be running the bottom layer to fetch a file or print a document. When more than two computers are connected, one simple cable won't suffice. The computers must connect to each other in the middle using a network hub.

FIGURE 1: PEER-TO-PEER NETWORK
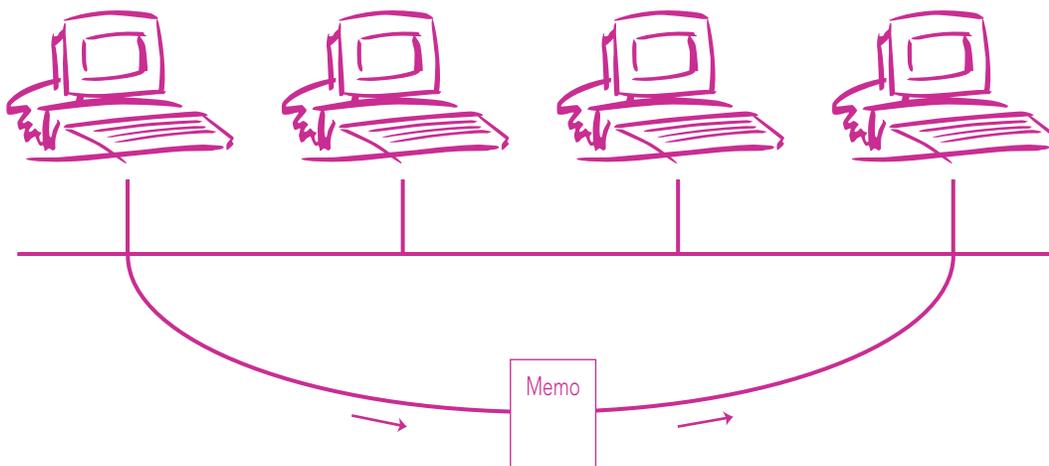
B. Client/Server

The client/server network is the most widely used type of networking because of its efficiency. Whereas computers in a peer-to-peer network can perform multiple operations, including running applications, displaying documents on-screen and printing, computers in a client/server network are more specialized.This type of system uses dedicated PCs or file servers, which hold a company's information databases in one location. Every user on the network can access files from the servers and save files to the servers. This keeps all critical data in one place, gives each user a dedicated link to it and makes it easier to back up the data.

A client/server network is composed of two kinds of computers: the server and the client. The server generally controls all the resources and puts them at the client's disposal. If the client needs something, it can send its request to the server. The server handles printing requests, not unlike a librarian who, with many resources at her disposal, responds to patron requests for books or other library resources.

FIGURE 2: CLIENT/SERVER NETWORK
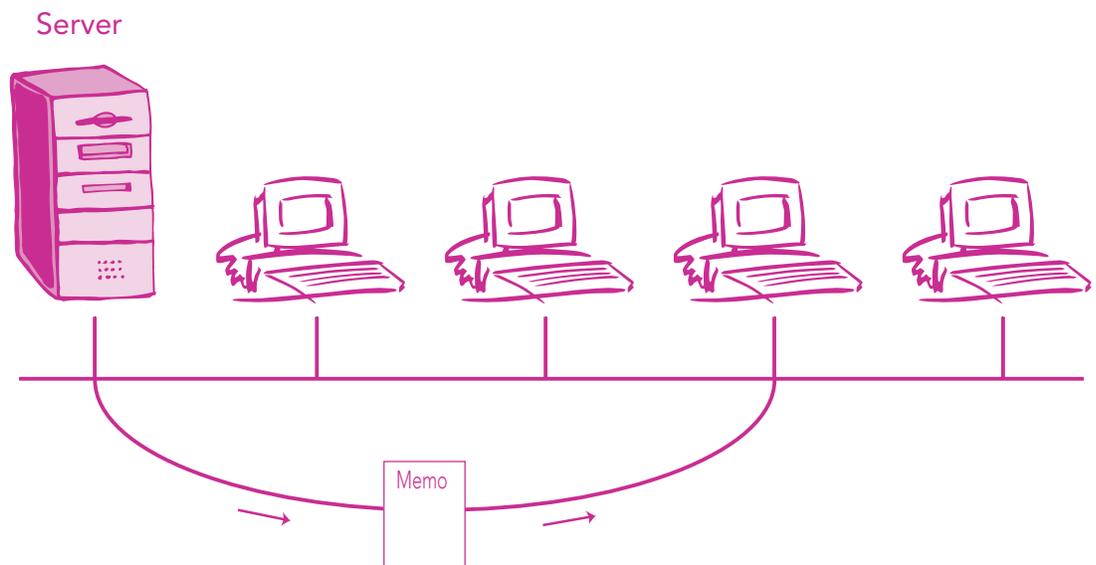
Server

Networks may also consist of more than one server, each of which has a specialized job. A print server handles the print jobs of its clients and servers. A file server stores or sends files. An application server runs applications and sends the results. Because each computer performs a limited scope of functions, taken together, they are generally faster. You can use the librarian analogy again to think of the different servers as a group of librarians. One librarian checks out books while another handles questions from patrons at the reference desk. With more libarians on staff, one lone librarian no longer has to shoulder the entire burden.

C. Broadband Services

In today's organizational technology structure, it's advisable to make Internet access available to staff. The speed and type of Internet access should be based on your organization's needs, size and function. Internet service providers (ISPs) provide access to the Internet. Some well-known ISPs are Verizon, Covad, Sprint and AT&T. Their service connects local-area networks to the Internet through either a dial-up connection (using a telephone line), digital subscriber line (DSL), cable modem or frame relay lines (T-1 and fractional T-1 lines). An Internet connection enables you to send and receive e-mails from outside your organization, transfer files and information, and view websites. Other Internet-based services include establishing a virtual private network (VPN) and other forms of remote access or control of machines.

Needs Assessment Worksheet

✓ Determine your staff requirements and their capabilities. Answers to these questions will help determine the network and equipment requirements for your organization:
  – Are any of your staff members disabled and would they require special computer equipment (visually impaired, hearing-impaired or voice-recognition software)? _____
  – Do you do a lot of graphic design (brochures, websites, flyers, etc.)? If so, what scanners and additional graphical equipment and software might be needed? _____
  – Do you anticipate heavy network usage? Additional bandwidth for the network would be required, along with larger storage space on both the workstations and server. _____
  – How heavy is your Internet usage? Do your staff members do a lot of research on the Web? If so, adequate bandwidth will be needed to keep browsing at a functional speed. _____
  – Do you do lots of file- and information-sharing? If a lot of sharing occurs, a client/server network would be preferred as that would help to centralize and secure data access. _____
  – Do you anticipate needing remote access? If your staff travels a lot, access to the network and e-mail outside of the office is required, along with laptops that are easier to transport. _____

✓ What is the intent of your network? (Check all that apply.)
- ❏ To increase staff efficiency and effectiveness by sharing information.
- ❏ To minimize data and effort duplication by centralizing information.
- ❏ To reduce marketing and distribution costs by use of electronic media — website, e-mail, fax.
- ❏ To expedite report generation by allowing the use of previously formatted reports.
- ❏ To reduce your staff overhead.

✓ How are you going to get feedback as to the efficiency and effectiveness of the network?
- ❏ Through surveys sent out to staff.
- ❏ Tracking more efficient completion of tasks.
- ❏ Noting the reduced manpower required for tasks.

✓ At the time of initial launch, approximately how many users will need access to the network? This will help to determine growth rate and what should be implemented now as opposed to later.
- – At the end of six months, how many users will the network have? _____
- – At the end of one year, how many users will the network have? _____
- – At the end of two years how many users will the network have? _____

✓ People like to use networks for a variety of purposes. What would you like your staff to be able to do while logged onto the network? (Check all that apply.)
- ❏ Network printing
- ❏ Desktop faxing
- ❏ File and printer sharing
- ❏ Internet access
- ❏ Remote site access

✓ What products or services would you like your network to include in the near- and not-so-near future? (Check all that apply.)
- ❏ Desktop scanning/faxing
- ❏ Intranet site
- ❏ Remote access/VPN between multiple sites
- ❏ Network-based meetings
- ❏ Voice-over-IP (VoIP) — Integrating phone system and computer network
- ❏ Video conferencing

✓ What functions do you specifically not want to have in your network? (Check all that apply.)
- ❏ Pornography
- ❏ Games
- ❏ Instant messaging
- ❏ Other _____

✓ What forms of security are currently in place and what security is planned for the future? It is important for liability and legal considerations that you implement and enforce security and usage policies, regardless of the size of your organization. (Check all that apply.)
- ❏ Network logon
- ❏ Network restrictions based on department and individual
- ❏ Firewall and other external access restrictions
- ❏ Efficient method of adding and removing staff and their access from the network

✓ What forms of disaster recovery are in place now and what forms are you going to implement? This is important so that in the event of a server crash, a building fire or even a death, your organization will be able to recover and continue operation. (Check all that apply.)
- ❏ Daily, weekly, monthly or yearly tape back-ups
- ❏ Off-site storage of tapes, passwords, documentation and other important information
- ❏ Maintenance contract with capable consultants who know your network and can provide support when needed.

✓ Do you have a network now? If so, does it meet your current and future needs?
- – What operating system does the server use? _____
- – What operating systems are on the workstations? _____
- – What security measures are in place? _____
- – What disaster recovery methods are in place? _____
- – What is your network's primary use? _____

✓ Managing a network is time-consuming. Have you assigned resources to this project to provide for its maintenance and management? _____

✓ How many system maintenance employees can you afford, and how much time will they require to maintain the network? _____

✓ Are you going to provide the security levels for each person and department?
- – If not, how would you want an outside contractor to develop such security measures? _____
- – Who has access to what type of information on the network? E.g., who is allowed access to the finance and/or human resources information? _____

✓ How many offices do you have and how many people work at each office? _____

✓ Do the offices need to be connected? _____

✓ Do the offices share data and resources? _____

✓ Have you given any thought to the layout of your network?
  – Do you have a secure, climate-controlled space for servers, routers and other network equipment? _____
  – Does your facility have the cabling required for all the machines? _____
  – Do you require or have a phone system? _____
  – Does your office have adequate security for the equipment that you purchase? _____

UNIT 3:
Web Technology

Learning Objectives:

By the end of this unit, learners will be able to:

- ✓ Define Web-based technology and list various types.

- ✓ State the advantages and disadvantages of implementing Web-based technology.

- ✓ Fill out the Web Assessment Worksheet at the end of this unit to plan how to set up a new website or modify an existing one.

I. Description of Web Technology

Web technology is usually hosted by a third party using HTML or another Internet-based programming language. It can be used locally (in the office) or remotely.

II. Uses of Web Technology

The Web is used to market company products or services and provide information about an organization's goals and business activities. It is also used to share company files and information with staff and clients, distribute information in a mass consumption format with minimal effort, and gather information in a mass environment in a centralized format.

III. Advantages and Disadvantages of Web-Based Technology

Advantages:

✓ Ability to extend business hours around the clock because the website is always "on."
✓ Easy and cost-effective dissemination of information.
✓ Easy access to information.
✓ Opportunity to be on an even plane with larger agencies.
✓ Extension of outreach capabilities.

Disadvantages:

✓ Increases vulnerability to security breaches.
✓ Offers staff easy access to inappropriate materials.

IV. Types of Web Technology

✓   E-mail
✓   Websites
✓   Intranets
✓   Data warehousing
✓   Database applications
✓   File management and manipulation
✓   Audio and video applications

V.   Setting up a Website

Approximately 240 million people worldwide have access to the World Wide Web (WWW). With such vast potential to reach a large audience, no organization can afford to ignore this medium.

The steps you must take to launch a website include:

✓   Create and reserve a domain name with a domain name registrant.
✓   Find an ISP to host the site.
✓   Design the site (the Web Assessment Worksheet at the end of this unit offers help with this) or hire someone to design it for you with an eye toward meeting the information needs of staff and constituents.

VI. Reasons to Launch a Website

✓ **To establish a presence:** A website makes the world aware of the existence of your organization.

✓ **To network:** Every smart businessperson and organization knows the value of contacts. A website allows an organization to pass out "virtual business cards" to thousands, maybe millions of potential clients, funders and partners and is available 24 hours a day.

✓ **To disseminate information about your organization:** Anyone, anywhere who can access the Web is a potential visitor to your website and a potential customer for your services. In addition, Web-based information lets your organization demonstrate its competencies and desirability to potential contributors.

✓ **To serve your customers:** Making organizational information available is one of the most important ways to serve your customers. You can use registration forms for services such as conferences or e-mail newsletters, and staff can access information on behalf of customers.

✓ **To release time-sensitive information:** This medium lets you release time-sensitive news about your organization at the click of a button. A midnight announcement of a merger, press release or the quarterly financial statements are only a few examples.

✓ **To sell products or services:** A website offers an inexpensive, low-maintenance way to market and sell products to clients or other organizations. This e-commerce function can be used to pay for conference registrations and dues.

✓ **To make available multimedia presentations and information:** You can include sound, pictures and short movie files on your website, making the information more attention-grabbing than inanimate brochures and other materials.

✓ **To reach a highly desirable demographic market:** Because of its vast potential to draw visitors, the Web is the ultimate mass-marketing tool.

✓ **To answer frequently asked questions:** By posting frequently asked questions on your website, you can remove another barrier to doing business with your organization and improve the productivity of your staff.

✓ **To give staff access to important information:** You can post key documents and information in a secure area of your website so that remote employees who need up-to-the-minute information for presentations, grant applications or even to close a deal can access it at the touch of a button.

✓ **To expand areas of service:** With a website, your organization can communicate with remote and even international markets as easily as with the organization across the street. Note that you should have a process in place for handling the business that will comes your way via the website.

✓ **To offer 24-hour service:** Websites serve clients, customers and partners 24 hours a day, seven days a week, without overtime costs. Your website can offer customized information to match needs and collect important information that puts your agency ahead of the competition before the office is open for business.

✓ **To make changing information available quickly:** Sometimes information changes before it gets off the press. Many businesses link their website to a database, which customizes the output to a database that can be changed as often as needed. No printed piece can match that flexibility.

✓ **To elicit customer feedback:** Traditional channels of marketing may offer limited opportunities for feedback. By using a Web page, you can ask for feedback and get it instantaneously at no additional cost.

✓ **To test-market new services and products:** A new product rollout can be very expensive, considering the cost of advertising and public relations. In addition, obtaining feedback and adjusting the new product accordingly is a slow process. A website dramatically lowers customer acquisition costs and provides the opportunity for real-time feedback.

✓ **To reach the media:** Media are an important tool for all organizations. The media are the most wired profession today, since their main product is information and they can get it more quickly, cheaply and easily online.

✓ **To reach a specialized market:** With millions of people using the Web, and more logging on every day, even the most narrowly defined interest group is represented in large numbers. Since the Web has several very good search engines, your interest group will either find you or your competitors.

Web Assessment Worksheet

✓ Describe your business or organization. (Going back to the business plan or mission statement of the organization, restate the reason for the organization being in operation and the services that it intends to provide, along with which market it serves. This will help you focus on what type of technology to implement.) _____

_____

_____

✓ What is this project intended to do? Is it a marketing tool, a data gathering and management tool, or an e-commerce site? What will the website accomplish and how will your organization determine success? (Try to get a real solid feel for the scope of the project.) _____

_____

_____

✓ What/who is the target market? Describing customers and Web audiences will help to determine the design of the website. Are they computer literate? How frequently do they use technology? Is the website targeting another organization? Remember to account for income levels and Internet connectivity — modem or broadband. What about equipment? Do they have older workstations or relatively current technology with the latest software? _____

_____

_____

_____

✓ At the time of launch, approximately how many Web pages do you think the website will have? This will help the developer determine how much work is expected and estimate how much time the project will take. This depends on which features are selected for the website. _____

_____

_____

✓ People like to use the Web for a variety of purposes. What would you like people to be able to do while visiting your organization's website? What products, services or information will be offered on the website? _____

_____

_____

✓ Is there an opportunity for e-commerce on the website? If so, what general types of items or services will you market? It could be items, registration for conferences and/or payment of dues. _____

_____

_____

✓ When fully implemented, approximately how many items and how many pages are anticipated for the website? This will help the developer determine how to build a scalable website that can handle all the new data as it is added.

_____

_____

✓ If your organization's website will have an e-commerce component, there are multiple methods of accepting payment. Will it use a manual process or an agreement with a payment services provider for real-time processing? Online credit card processing is extremely convenient but also can have security holes in it, so your e-commerce plan should balance convenience with giving users confidence that their information is secure. _____

_____

_____

✓ Do you have a domain name now? What is it? If so, is it easy to remember? Many names can point to the same site and each only costs about $35 a year. What is a good name for your site? List ten (remember that some names might be taken already). _____

_____

_____

Design

✓ What image does your organization want to portray to the public? Please be specific. What sorts of things won't be allowed on the website? The website may be the first or only thing that potential funders, partners and clients see about your organization. Make sure that this impression is a good one.

_____

_____

_____

✓ Do you have a preferred style of layout? _____

_____

_____

✓ Does your organization already have a website? If so, what are its pros and cons? What is and isn't working? _____

_____

_____

✓ Does your organization have a logo? Will it drive the new website's color scheme? If not, what sort of color scheme will the firm select? (Be specific — tones and colors, brightness, hue.) ———————————————
————————————————————————————————
————————————————————————————————

✓ Are there any websites whose design you think would work for your organization? What are the pros and cons of alternative sites? ———————————
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✓ Is there an interest in animation, streaming media, or audio or video? Remember that this type of media will slow down the browsing capabilities of website visitors and will also cost more to develop. ——————————
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————————————————————————————————

✓ Is the content available now or will a vendor create it? It is always good to prepare the website content ahead of time, as it will speed up the project and save money. ————————————————————
————————————————————————————————
————————————————————————————————

✓ What about the navigation of the website? A rule of thumb is no more than eight top-level links. What are your primary navigation areas? Some examples of links are: home, about us, service areas, contact us, contract areas and partners. ———————————————————————
————————————————————————————————
————————————————————————————————

✓ Creating content for a website is often time-consuming. Have you assigned resources to provide the content? Website content can be similar to print media. In many cases, however, the presentation is different, so you should review the content before engaging the website developers to avoid draining the budget. ———————————————————————
————————————————————————————————
————————————————————————————————

✓ Are the images that will be used on the website readily available to the developers? If brochures and other marketing materials are available, you can could save a lot of time and avoid headaches by using existing images. If images are not available, be very clear to designers about the types and quantity of images you want. ———————————————————————————
————————————————————————————————
————————————————————————————————

✓ Is the website an internal means of exchanging information, i.e., an intranet? This could be an easy way to streamline internal or external processes and cut costs by centralizing the location and access to information as well as standardizing the format needed to view the information. _____

_____
_____

✓ If an intranet is included, what features are desirable? E-mail, database information gathering and report generation are a few types of applications that can be handled on an intranet. _____

_____
_____

Database

✓ Application service providers (ASPs) allow real-time, Web-based interaction with ODBC-compliant data sources. This can save organizations with data-entry and retrieval needs a great deal of money because the costs of training and maintenance will be minimal compared with having multiple systems.

_____
_____
_____

✓ Is there an existing database or database-type application? _____

_____
_____

✓ What are the uses of the existing database applications? Which data are gathered and reported? _____

_____
_____

✓ Does the existing database system integrate with other aspects of the business? Which aspects? How does it fit into the organizational process? _____

_____
_____

✓ Will the information be private or public? This is very important, since without the proper security, private information is accessible from outside the organization.

_____
_____
_____

✓ If private, how will you control access to it? Control measures could be by logon
name, access level restrictions, secure socket layer (SSL), encryption, etc.

_____

_____

_____

✓ Where would the organization access the information? Would most of the in-
tranet site be accessed from inside the office, from home or while on travel?

_____

_____

_____

✓ For remote access to the database, how will your organization connect to it,
and how important is speed? Also, what is the common connection speed of
your staff and other users of the website? _____

_____

_____

✓ Describe what you would like to be able to do with the website and data.
Do you want to have the ability to review data, update it and run reports
against it, or have other data-management capabilities? _____

_____

_____

✓ Is there a copy of the database structure available? It should include all tables,
fields and data types. By having this at the beginning of the project, the project
manager and developers will have a better sense of how much work is required
to duplicate the system on the website. _____

_____

_____

✓ What is the planned deadline? Be realistic and practical. Remember, every delay
caused by lack of information and content is not the developer's fault, but rather
the result of poor planning. _____

_____

_____

✓ Is there a budget for this project? What is the amount? Keep this number in
mind as you make changes and requests for additional work. Anything outside
of the original scope of work will cost more money. "Proper planning prevents
poor performance." _____

_____

_____

UNIT 4:

Basic Software Applications and Uses

Learning Objectives:

By the end of this unit, learners will be able to:

✓ State some of the applications that can be used to perform common tasks.

✓ State how these applications can be used to do work more efficiently.

✓ List alternative uses for these applications.

I.   Word Processing Tools and Uses

A word processor helps prepare documents such as articles and letters that can be printed on paper or viewed and/or stored electronically. Although there are many kinds of word processing software, most share the same basic functions and do not require advanced computer or typing skills to use. These basic functions include:

- ✓ Typing
- ✓ Saving documents
- ✓ Opening documents
- ✓ Copying
- ✓ Pasting
- ✓ Cutting
- ✓ Printing
- ✓ Checking spelling
- ✓ Formatting

There are many brands of software that operate on Macintosh or Windows computers. These include Microsoft Word, ClarisWorks, WordPerfect, WordPad and AppleWorks. Microsoft Word is one of the most popular and powerful word-processing programs on the market. You can use it to create a variety of documents:

- ✓ Letters and memos
- ✓ Résumés
- ✓ Newsletters and multi-page reports
- ✓ Online documents (with sound files)
- ✓ Web pages
- ✓ Brochures, flyers and signs

You can also format documents to add emphasis by using bolding, color, underlining or italics. You can create outlines. The spell-check function finds and corrects spelling errors. Headers automatically print on the top of each page; indexes and tables of contents can be generated for long documents; drawing tools, images, WordArt and columns produce professional-looking newsletters; table and shading functions produce fancy forms; and the mail-merge function adds individualized information to form letters.

Why Learn Word Processing?

- ✓ It's useful for creating professional-looking résumés, flyers and other documents.
- ✓ Most jobs require word-processing skills.
- ✓ It's a useful tool for writing long e-mails, and offers a spell-check function.
- ✓ Its capabilities go beyond documents to form letters, Web documents, e-mail and more.

What Does a Word Processing Screen Look Like?

A sample of a screen in Microsoft Word is shown below:
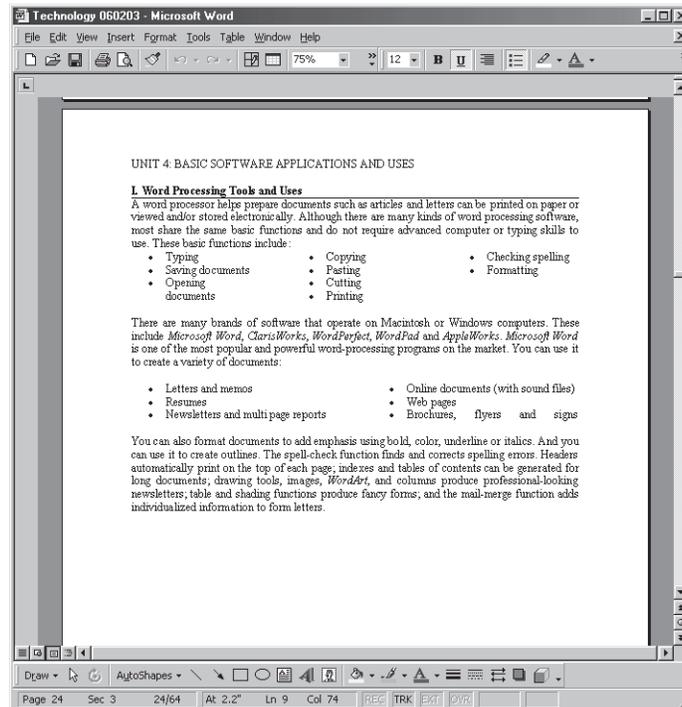
II.   Presentation Tools and Uses

Presentation software programs have become popular in the last several years because they are relatively easy to learn and offer ways to make attractive materials for presentations and talks. One of the more popular presentation tools is Microsoft PowerPoint, which lets you design and produce professional-looking presentations and to dazzle your audience.

Using Microsoft PowerPoint you can:

✓   Create slide shows.
✓   Create overheads.
✓   Develop automated presentations.
✓   Build animated computerized presentations.

✓ Create hand-outs to accompany your presentation.
✓ Deliver multimedia computerized presentations with graphics, timed transitions, sound and video.
✓ Convert presentations into HTML documents for posting on the Web.

Why Learn Microsoft PowerPoint?

✓ It's a useful tool for delivering a message powerfully and professionally.
✓ Familiar Microsoft Word menu and toolbar make it an easy application to learn.
✓ It's included in Microsoft Office Suite, so it does not require an additional purchase.
✓ Its capabilities go beyond overheads to Web presentations.

What Does Microsoft PowerPoint Look Like?

The screen below displays a sample PowerPoint screen with the outline window on the left, the slide on the right and the notes window on the lower right. Instead of working with document pages, PowerPoint divides the presentation into slides. When the presentation is printed, you have the option to print up to nine slides per page.
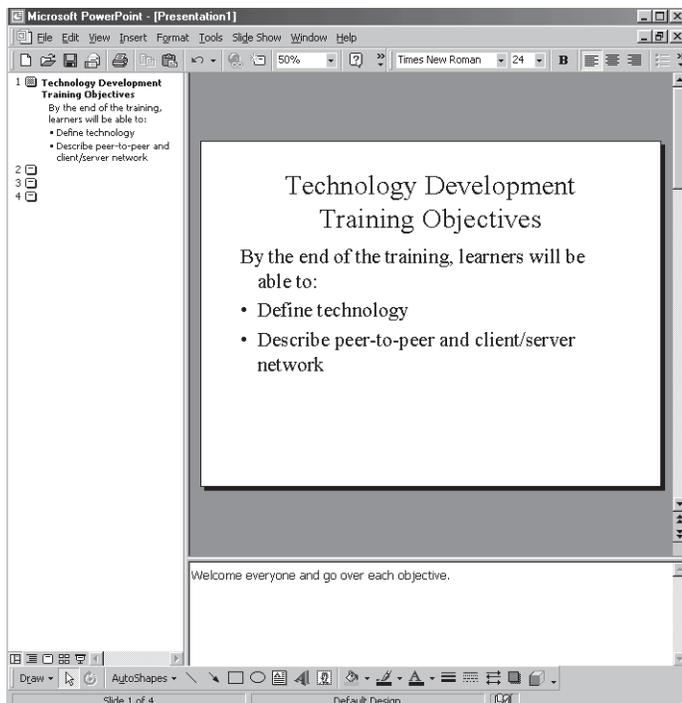
III. Spreadsheet Tools and Uses

Spreadsheets are used to manage a relatively large number of records or entries and format them for display, presentation and/or to perform further operations on them. Microsoft Excel, QuattroPro and Lotus 1-2-3 are common spreadsheet software programs. Microsoft Excel is probably the most popular. Its electronic spreadsheets can improve accuracy, efficiency and productivity. Once you create a worksheet, you can easily change entries and the software recalculates the information. Excel contains useful functions, such as "sum," which automatically adds a column or row of numbers. If you have to change any numbers, Excel automatically recalculates the total. You can also enter formulas into the worksheet using arithmetic operators and cell references.

Why Learn Microsoft Excel?

✓   It's a useful tool for creating and managing spreadsheets efficiently and professionally.
✓   It's included in Microsoft Office Suite, so it does not require an additional purchase.

What Does Microsoft Excel Look Like?

The Excel menu bar, scroll bars, and toolbars have features similar to other Microsoft Windows programs. Can you identify common features in the screen below? Instead of a document window as you would see in Microsoft Word, you see a worksheet window with columns identified by letters and rows identified by numbered headings. The cell is the rectangular area where a column and a row intersect.
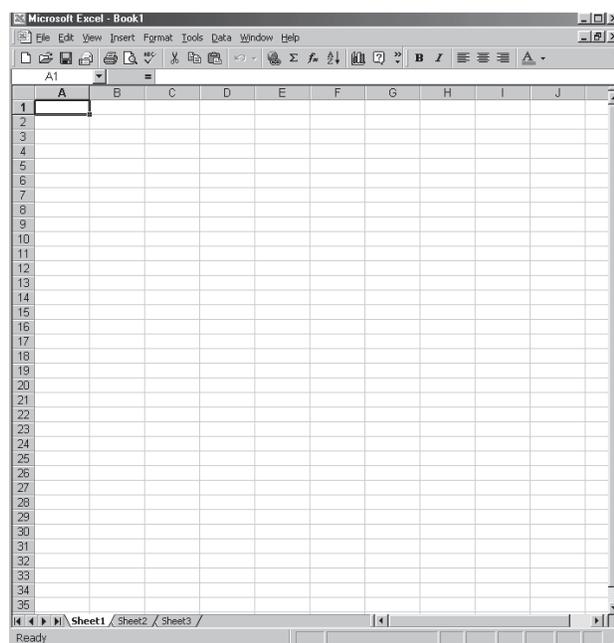
IV. Database Access

Many organizations today use some form of database to organize information. Organizing, storing, maintaining, retrieving and sorting data helps us find and use information effectively. Some software programs that perform these operations are Microsoft Access, Microsoft SQL Server, Microsoft FoxPro and Seagate Crystal Reports. Microsoft Access is a popular and powerful relational database that has the following functionalities:

✓ **Tables:** Structures for organizing information.
✓ **Queries:** Method to search for specific characteristics within the information.
✓ **Forms:** Alternate method to enter or view information in a table.
✓ **Reports:** Arrange data from one or more tables for printing or viewing on the screen.

Why Learn to Use Microsoft Access?

✓ It's a useful tool for database design, query design and view design.
✓ It's useful for developing applications in Visual Basic, which can be connected to an Access database.

What Does Microsoft Access Look Like?

Although Access has a title bar, menu bar, scroll bars and toolbars, the interface is much different than other Microsoft applications. You will, however, find Access tables to have some features in common with Excel worksheets. When you open Access, you will see a screen similar to the one below.
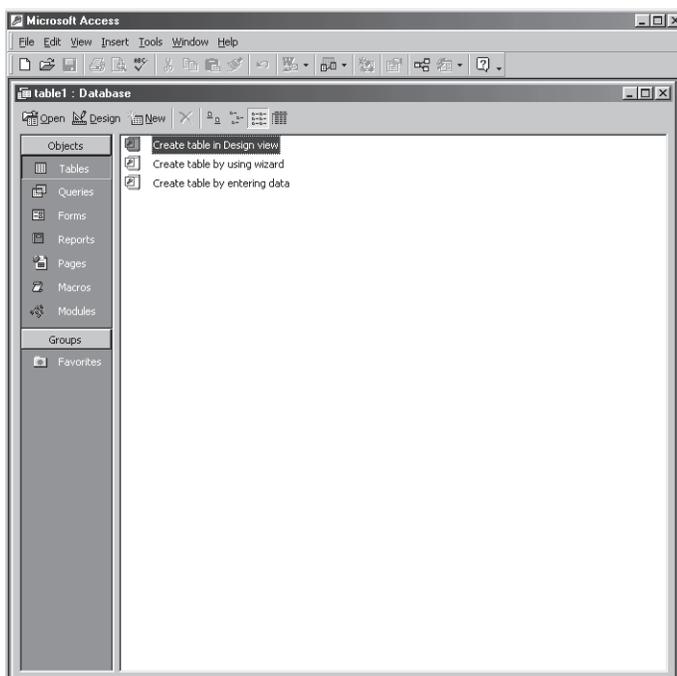
V. Adobe Acrobat

Adobe portable document format (PDF) is the de facto standard for electronic document distribution worldwide. Adobe PDF is a universal file format that preserves all the fonts, formatting, colors and graphics of any source document, regardless of the application and platform used to create it. Adobe PDF files are compact and can be shared, viewed, navigated and printed exactly as intended by anyone using Adobe Acrobat Reader. You can convert any document to Adobe PDF using Adobe Acrobat software. PDF files can be published and distributed anywhere — in print, attached to e-mail, on corporate servers, on websites or on CD-ROM.

Why Learn Adobe Acrobat?

- ✓ It's the best way to share documents online.
- ✓ The free Acrobat Reader is easy to download from the Adobe website.

What Does Adobe Acrobat Look Like?
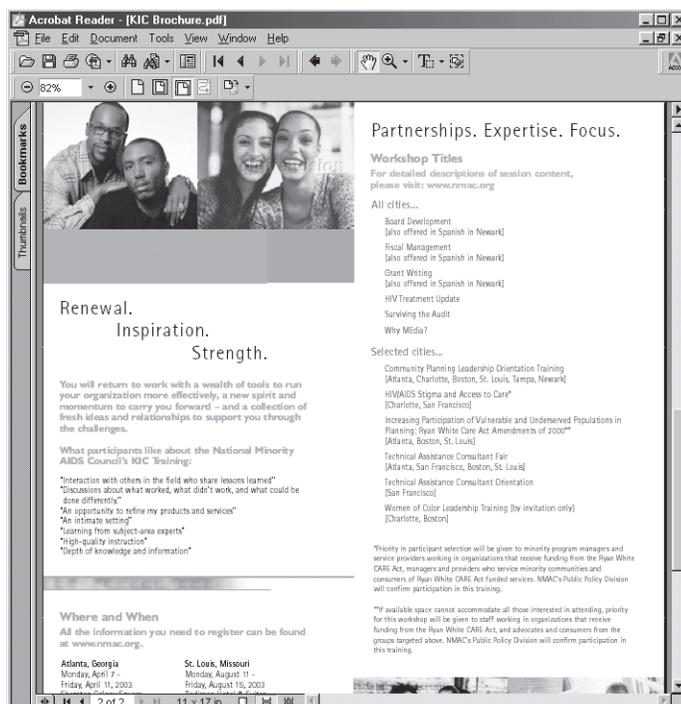
Microsoft's Office Suite — Word, PowerPoint and Excel — as well as Microsoft Access and Adobe Acrobat software provide powerful and simple ways to prepare documents for the Web.

    While these software products are relatively easy to learn, it can be disappointing and frustrating if you don't understand how to use them. Proper training will lead to more professional-looking documents and materials. It is also important to note that these are by no means the only applications available to perform the tasks mentioned above. There are a host of other software tools, some of which were also mentioned, that can likely yield similar results. The five software programs presented in detail in this manual are included to give readers a brief introduction to key features and functions, and explain how they help with routine communications-related tasks.

UNIT 5:

Assessing Your Technology Assets

Learning Objectives:

By the end of this unit, learners will be able to:

✓ List what to consider when assessing technology assets.

✓ Identify key areas of your agency that need to be assessed.

✓ Describe how to perform a needs analysis in those key areas.

Now that you understand technology, you can assess what types of technology your organization needs. Making an unprepared technology decision is a mistake that will cost horrendous amounts of money and interfere with organizational efficiency. To make an educated technology purchase decision, follow the steps suggested below:

I.   Get Back to Basics

Purchase decisions made today will likely affect your agency for at least the next two years. Before buying anything, revisit your business plan and the goals of your organization. The mission of your organization should be the guidepost as you think of ways technology can help reach its goals. When the agency was started, a business plan was developed that served as a guide for the purpose and intent of the agency. It outlined the services to be provided, the target market, and the strengths and weaknesses of the management staff and potential competition. The same type of planning and commitment must be put into your technology purchase decision, and it should support the business plan and the goals of your organization.

It is not advisable to purchase technology that doesn't directly support agency goals in one way or another. There is no need for video conferencing equipment and/or fiber optic lines in the office, for example, if there are only five users on the network and they all work in the same location. Alternatively, it is not wise to order a dial-up service if the agency staff consists of 20 people who have high Internet usage requirements.

A well-thought-out technology plan should guide your technology purchases and upgrades. This way, when vendors and consultants arrive with their various sales pitches, you can compare their offers to your technology plan. Of course, since purchasing technology may not be your main job function, you might not know all the new gadgets and features available. The technology plan does not have to specify the type of equipment and software, rather it should detail how new technology will enhance agency services and functions. Consultants or your IT staff can then determine which equipment is needed to accomplish which tasks.

Here are 9 steps in a basic technology needs analysis:

1. **Define the problem in concrete, measurable terms.** An example of a poorly written problem statement is: "The beta-test version of our software isn't being thoroughly tested before going to market." It is better to say "We have improved our speed in getting new products to market, but at a cost. Customers are finding a three percent error rate with piloted software. We need to improve our beta-testing so that we lower that error rate by at least 50 percent." Conducting focus groups is a great way to build a problem statement. The focus groups will help you to test out and properly define your issues, as they should be taken from the users of the current technology who are knowledgeable and interested in its improvement. They would also be able to provide you the numbers needed to properly determine the issue.

2. **Investigate the problem with the current equipment or lack thereof.** Ask what processes are in place. Ask how staff currently do their jobs. Observe people doing their jobs. If possible, talk to staff and customers (internal and external) about the services provided and the equipment in use. Look for both consistencies and inconsistencies in the information gathered.

3. **Catalog the steps required to complete the process or task.** Use this information to build a road map for technology implementation. Ask for input on your roadmap from co-workers and people involved in the process before moving forward.

4. **Develop a skills inventory for each task.** Ask a mix of associates, managers and customers (if possible) what is required to do the job successfully. Create benchmarks based on peer agencies' experience and performance standards. Professional associations can be very helpful with this. Again, look at consistencies and inconsistencies in the way things are done. Also, look closely at external sources of information.

5. **Determine self-assessed skill levels.** Ask staffers to rank their skills in areas critical to success. Ask what else they need to be successful (resources, support, etc.).

6. **Determine management's definition of required skills and its assessment of current skill levels.** Gaps between self-assessed needs and management's perceptions of these needs are red flags.

7. **Develop an independent and objective assessment instrument.** Examples of assessment instruments include:
   - ✓ Written tests
   - ✓ Simulations
   - ✓ Skill observation checklists

8. **Determine the average skill level of your employees (from the assessment instrument noted in item No. 7).** This should be done at the beginning of any technology implementation, and should be compared against three things:
   - ✓ Each employee's self-assessment
   - ✓ The team's (a particular group of users) cumulative self-assessment
   - ✓ The manager's assessment

9. **Closing the gap.** If the analysis is done correctly, problems will become apparent immediately. Possible gap areas will be found between:
   ✓ An individual's perception of skill level and actual skill level.
   ✓ Management's perception of resources required to succeed and employees' actual needs.
   ✓ Customer expectations and internally developed objectives.

For a technology training program to have maximum impact, all these issues must be addressed. Be careful, though. Needs assessments are such powerful tools that once you have uncovered the issues lying beneath the surface, you will be expected to resolve them. While training is the solution to some issues, other gaps can require more complex solutions, which may be costly to implement. Some solutions such as purchasing new equipment or software and doing away with an old product, or getting rid of or reassigning a consultant or employee that is currently managing the technology in the agency might not be popular.

II. Perform a Technology Assessment

After you've created your technology plan based on agency goals, the next step is to assess your agency to determine where technology is lacking and where it is sufficient. This will help you clarify your goals, calculate potential expenses and create a timeline for the technology implementation.

You must assess several areas before you implement a full-fledged technology plan. You can make this as formal as you like and as long and detailed as necessary to make the right decision. The more time and effort you spend in the beginning laying out your plan, the smoother the implementation process will be. As someone once said, "If you fail to plan, you plan to fail."

A technology assessment or inventory gives you a starting point for your technology plan. The initial assessment will help you determine where you are in regards to technology and where you have to go. Ask questions: What types of technology do I have now? Do I have all the necessary applications to function efficiently and effectively? Does the technology meet agency needs? Does the technology need improvement? How can the technology be improved?

You should conduct an inventory assessment by comparing current equipment and its capabilities with the latest technology standards. You must determine, based on your office requirements, whether new technology is needed or if technology purchases should be made at a later time. Verify that you have all the applications you need to provide services.

For example, when other agencies send you files, can you access them? When you send files to other agencies, are they able to access them in the right format? Can you collect and report on the data that you need in the proper format?

III. Perform an Infrastructure Assessment

You should conduct the same type of assessment with your office infrastructure. This includes determining what cabling is installed in your building and how much is needed for future growth. (Cabling refers to network cables and telephone cables.) Depending on the size of your agency, does the server room need to be upgraded with new equipment and capabilities? Do you have or need a separate climate-controlled server room and phone closet? What type of phone system do you have? Can it handle your needs now and in the future? Is your office space adequate for your technology and staff? Do you have a steady and reliable supply of electricity? (See the "Infrastructure Assessment Work-sheet" at the end of this unit.)

IV. Perform a Staff Skills Assessment

You should conduct an assessment of the staff's technology skill level to determine who would need training on new software or hardware products. Is the staff willing to accept technology changes? Does the staff have the competencies to incorporate the technology changes? These questions may seem simple and basic, but a major reason technology upgrades do not work is because the staff and other users do not accept them, creating a waste of time and money.

V. Perform a Client Assessment

What do your clients need? Can you track information sent to them? Can they receive information you send in the right format? Is your technology a hindrance or help to them and can you prove it?

Infrastructure Assessment Worksheet

✓ What is the computer knowledge and experience of your staff?
  – If minimal, what is your training budget? _____
  – If it's extensive, can they train others or would that be disruptive to the training process? _____

✓ At what point would you feel the training effort was successful?
  (Check all that apply.)
  ❏ Reduction of time and cost for certain tasks by a particular percentage.
  ❏ Increased speed of report — and information-production or -gathering.
  ❏ Reduction of staff required to complete certain functions.

✓ What image do you want to portray to your staff about the technology used in the office? (Check all that apply.)
  ❏ Only for office use.
  ❏ Okay for some personal use.
  ❏ Feel at home and do what you like.

✓ What are the rules for the proper use of office equipment and are they written down? A technology use manual should be developed, maintained and enforced. This manual should include the proper use of office equipment, the terms of use and actions against those that disobey the proper use mandate. It should also include privacy statements and the authority that the agency has to staff information. _____
  _____

✓ Do you have an IT department? _____
  _____

✓ Is someone responsible for current equipment or technical requirements? What do the employees need technically to perform their duties and whose responsibility is it to purchase and provide it? _____
  _____
  _____

✓ Is there someone you can ask for advice about technology concerns who has the best interests of your organization at heart? _____

_____

✓ What sorts of equipment are you interested in purchasing for the agency, (what is the size, functionality, price)? Do you need the biggest and best available or just something basic for office use? _____

_____

✓ Is space an issue? If so, would you consider flat screen monitors and laptops?

_____

_____

✓ Is security an issue? If so, would you consider security cables for the laptops and other equipment? _____

_____

✓ Are there agencies similar to yours that you could visit to ask for technical assistance? If so, bring along information about your current technology so you can discuss it:
   – List applications in use: _____

   _____

   – List equipment in use: _____

   _____

   – What is it that you like or dislike about each? _____

   _____

✓ Equipment donations or acquisitions: Which is more economical?
   – What standards will be used if donated equipment is accepted? _____

   _____

   – What is required to get it to work with other equipment? _____

   _____

   – Should you ask for cash instead so you can buy according to your specs?

   _____

✓ Do you have an approved budget for equipment?
   – Do you want to spend all the budget now or lease the equipment?

   _____

   – If you purchase equipment now, what is the timeline for replacement or upgrade? _____

   _____

   – If you lease now, what are the terms of the lease and the options at the end of the lease? _____

   _____

✓   Are you going to provide the security levels that determine what each user and department is allowed to see? For example, can anyone beyond the accounting department see the financial information on the agency? Who has access to the human resources information? _____
_____
_____

✓   If not, how would you want to develop such security measures? _____
_____
_____

✓   How many offices do you have and how many staffers work at each office?
_____
_____

✓   How much equipment do you think you will need? (PCs, printers, scanners, copiers, etc.) _____
_____
_____

UNIT 6:

Why Do I Need It?

Learning Objectives:

By the end of this unit, learners will be able to:

✓ List the reasons a technology upgrade is needed.

✓ Determine what type of technology upgrade is needed.

✓ Describe technology compatibility issues that should be considered when your agency interacts with potential funders, e.g., ensuring compatibility with their systems, processes and equipment.

Should anyone question the need for technology or technology upgrades, use the technology assessments to support the decision to purchase or upgrade equipment. Assessments help you determine what equipment you need. However, even that information does not tell you why you need the technology. Continue with the decision making process to determine why particular equipment is needed.

I.   Business Focus

You and your staff should determine if new technology is really needed. For example, ask yourself if you should buy a fax machine if none of your business partners or constituents have one, preferring to use e-mail. Or, should you buy office application "A" when your funders and the agencies with which you interact use office application "B"?

As your agency is closely linked to its funders and to other agencies, you should ensure that your technology is compatible with theirs. Compatibility with funders and other agencies helps maximize your return on investment by allowing you to easily and seamlessly accomplish tasks. For example, if your funder wants you to apply for grants or submit information using a particular software application, in most cases if you can not comply, you will not be funded.

You might want to ask around and see what applications other agencies are using and where they bought their equipment. This can be a great source of information.

II.   Service Provision and Efficiency

After you have determined which types of technology your agency requires, you should analyze the needs of your customers/clients or target market. Based on the specific work of your agency, how would various technology purchases help to serve them? Will it help get your message to them faster? Will it help them improve their situation? Will you be able to attend to more clients faster and in a more productive manner?

Technology, as mentioned earlier, promotes faster operations, especially when it comes to creating, duplicating and disseminating information. For example, an e-mail management tool can give you quicker access to more people. This greater production efficiency helps conserve resources needed to manage and disseminate information and minimize administrative inefficiencies. At this point, take a moment to consider and write down the services your agency provides that new technology will change or improve.

UNIT 7:

When Do I Need It?

Learning Objectives:

By the end of this unit, learners will be able to:

✓ Determine when a technology upgrade is needed.

✓ Explain the importance of designing a timeline for completing a technology upgrade that is both reasonable and realistic.

✓ Divide such a timeline into phases.

Before you consider purchasing new technology or equipment, you should consider whether it's an opportune time to buy. Computer technology, compared to most other products, has a short lifespan. On average, the right technology will give you only two to five years of useful and productive service. In fact, today's rapidly changing computer products are considered "old" within three to six months after purchase or release date — and ancient after only about a year.

Because computer technology has such a short lifespan, you shouldn't rush out to purchase the next new equipment just because the sales rep says the sale ends tomorrow. One problem with being the first to buy a new technology is that the manufacturer inevitably finds there are a number of "bugs" in new applications and equipment. It's better to wait and purchase the equipment after the service patches are released by the manufacturer or the second generation of equipment hits the market.

I. Timelines

You also need to create a purchase and implementation timeline. A network is like a jigsaw puzzle. You can usually start with any section, but it usually works best if you do the corners and outlines first. In technology terms, this means laying the foundation and infrastructure first. The timeline of activities and events will serve as a guide for when particular technology will be introduced and how much the transition will interrupt daily activities. "Zero interruptions" is not an option because installing new equipment takes time and it will interrupt your schedule. The goal is to accomplish the installation in a way that minimizes interruption.

II. Phases

By doing the project in phases, you can control what is being done and manage budget expenditures. Divide new technology installation into phases, with start and end times for each phase, and include what the "deliverables" are for each phase.

For new installations where cabling and a phone system is required, include these tasks in Phase 1 since it probably will be provided by one vendor.

The next phase, depending on your needs, might be the purchase of servers and related software. This part is the back end of the network and you can limit how much of an effect it has on your users.

The third phase is the upgrade or purchase of equipment for staff. This part can also be broken down a bit by purchasing computers for only a certain number of people. But this must be balanced with the need to keep the project from dragging on too long.

In the event that time is of the essence, you could request from your IT staff or consultants that some of these phases be combined or worked on after hours. This might increase your costs, as after-hours work is usually billed at a higher rate. And it means you or your staff would have to be available to the consultants after hours.

UNIT 8:

Who Should Do It?

Learning Objectives:

By the end of this unit, learners will be able to:

✓ Determine the skill set required to perform an efficient technology implementation.

✓ Explain what to look for when choosing a consulting company.

✓ Determine whether staff or an outside consultant would be better suited for handling a technology change.

You now have an understanding of what technology is, what kinds of equipment you need, why you need it and when. Now you should decide who will manage the technology installation.

This part of the equation is not as complicated as the others, though it does require a lot of time and attention. Just as you conducted an assessment in the "what you need" section, you must conduct a staff resource assessment to determine who will handle the technology change. This assessment will be based on agency technology needs.

The first step is to determine if your IT staff have the skill and — more importantly — the time to do the job. IT staff might have the expertise to perform system upgrades or application and Web development. But you must balance this availablility of skills and expertise with the fact that the project will take them away from their regular support and management duties. If that isn't acceptable, there is nothing wrong with asking for help from more knowledgeable outside experts.

I.   Skills

This is the point where you should assess the skills required for the project and decide who has the skills you need and whether you can afford to perform the technology implementation. Some questions to ask:

✓   Are agency staff skilled enough to implement this project or will this overwhelm them?
✓   Are agency staff better served by just helping an outside consultant?

To answer these questions, ask staff members and consultants you are considering hiring to provide you with examples of their work on similar projects. Whoever is selected to handle the project should be well-versed in technology and able to explain how they intend to accomplish the project. If you choose to hire a consultant, look for one with a solid reputation — this is critical to the success of the project. Don't hesitate to contact a consultant's past clients. Or, contact your local technical assistance provider for referrals of reputable consultants.

II. Time Requirement

Another thing to consider is the amount of time you estimate will be required to complete the project. Start with the date you'd like to have the project completed to establish a range for a timeline. Then ask IT staff or the consultant candidates to provide a timeline that shows when they estimate the project could be completed. Compare their timelines to yours.

Watch out for timelines that do not include testing phases or allow enough time for proper deployment. Also, depending on the project, be wary of timelines that are too short or too long. In the event of timelines that look too short, the consultant probably does not have a full understanding of the task requirements and thus has under-budgeted time and effort for the job. This will inevitably come back and cause problems as the project progresses. For extended timelines, the consultant has probably put too much time into the project either for their billing benefit or because of lack of knowledge of the task and their attempt to cover their learning curve. It is a good idea to have the consultant and/or your staffers go over their timeline and explain each phase and deliverable.

When time is at a premium, ask yourself a harder question: How much would you be willing to pay to get the project done within that timeline? If it's a lot, a consultant would be a better choice because they can be held responsible if they agree to complete the project within your timeline but fail to do so.

Another consideration is staff time constraints. Even if staff are skilled enough to handle the project, they might not be able to implement it in a timely manner and still handle a normal workload.

And don't forget, even if you decide to hire a consultant, someone on staff has to show the consultant what technology the agency currently uses, how the system is set up and exactly how you want the new system to run. This means you should assign at least one staff member to the project at least part-time. That staffer — preferably someone who can spare the time during the work day — would have to adjust his/her schedule and workload to provide support to the consultant

**Technology
Development**

III. Consultant Assessment

If you decide to hire a consultant — whether because IT staff don't have the time or because they don't have the expertise to handle the project — you should do some homework before you sign the contract. Investigate what the going rates in your area are for the various tasks and services you'll need performed. You will encounter bargain-basement prices, astronomical rates and everything in between.

Ask other local agencies which consultants they've used in the past (or still use), and how well they implemented a new technology infrastructure. Cheap does not always imply a good deal, nor does expensive mean great experience. You should research all vendors and make sure they have experience in the areas you require work to be done. Also, ask for all work commitments in writing to ensure that everyone agrees on the deliverables.

You should also interview your staff the same way you would interview consultant candidates to determine if they have the skills and experience to handle the project. Review the résumés of the staff who volunteered for or were assigned to the project. There is absolutely nothing wrong with assigning the project to an internal staffer. That way, at least, the skill can be developed in-house. But you must make sure the staffer is given the time and resources to learn the necessary skills to do the job well. If you go this route, you might not always get the best, but at least you will have the skills in-house should they be needed again. Just be mindful that the staffer likely has other duties, which will extend the timeframe of the project as well as the cost.

If it's possible financially and timewise, the best course is to use a consulting company. In the event that your project is large or complex enough that neither staff nor an individual consultant can handle it, company will likely be large enough to have someone with the expertise you need. A group of consultants or a consulting company can usually provide the additional resources and experience to implement your project. Also, they are usually objective about network choices.

Consulting companies are usually larger and more experienced than individual consultants and sometimes their rates are higher. But if you pay close attention to costs and the timeline, you'll ensure that the consultants stay within your budget.

UNIT 9:

Cost Considerations

Learning Objectives:

By the end of this unit, learners will be able to:

✓ Explain the importance of having a well-developed budget.

✓ Make cost-effective spending decisions.

✓ Assess the budgetary needs of your organization concerning the implementation of a technology upgrade.

✓ Answer key budget questions prior to deciding to perform a technology upgrade, e.g., to buy or lease equipment, to buy or develop software.

✓ Determine the situations in which any one of the above-mentioned options would be preferred over another.

After all the analysis to determine which technology you need and when, who has the skills to implement the technology change and whether to hire a consultant, the decision to upgrade technology boils down to cost. But cost isn't just measured in dollars. How long much time will the project take? How much will the consultant charge? How much stress will this cause? A well-thought-out technology plan must answer these questions to ensure you have the time, funds and staff resources you need.

I.   Budget — Time, Dollars and Peace of Mind

More important than "How much is it?" is the question of "Can I afford it?" Consider this carefully because any IT project's financial and resource costs can get out of hand quickly and easily. Consider whether your staff and the consultants have sufficient time to dedicate to the project, and if you have the budget to tackle the project in a thoughtful and timely manner.

Many nonprofit organizations are quick to accept donated computer equipment or volunteered time and consulting, figuring that if it is free it is worth it. But often the donated equipment is not state-of-the-art technology and does not match the office technology. Also, volunteers sometimes don't have enough time to donate and end up slowing down the project and costing an agency time and energy.

II.   Acquisition vs. Lease vs. Donation

For computer equipment, the main two options are outright purchase or lease. A purchase requires a direct outlay of funds for the equipment. If cash flow is not an issue, then purchase is the best option, because the equipment will be paid off immediately and you can focus on its use.

Some sources of funds for technology purchases include your local technical assistance provider, your local bank, your board of directors or local companies that are willing to donate money.

Another way to finance the cost of the equipment is through a technology lease. Leases are becoming more popular because they spread the financial burden that new equipment places on an agency over a period of time. Because a lease requires a smaller initial outlay, it can help you obtain more equipment than if you bought it outright. Lease payments are determined by your agency's credit history, current interest rates and the amount that's being financed.

Another benefit of a lease is that the interest and other associated costs can qualify as business expenses. A third benefit is that at the end of the lease term you can exchange the equipment for a newer version and continue to make comparable lease payments. In some cases, you can even build into the lease the costs of maintenance and a warranty for the equipment, making it more affordable than a comparable purchase.

Often you have the option to buy the equipment at a reduced rate at the end of the lease. This is not advisable however, because technology changes so often that it's likely to be outdated.

III. Pre-packaged Software vs. Custom-Built Software

Two other decisions you'll have to make are whether to purchase brand-name equipment or so-called "white boxes," or generic brands, and whether to purchase pre-packaged or custom-built software.

Brand-name computer hardware, such as Dell, Gateway, HP (Compaq) and Toshiba is usually sold at a premium. The main benefit is that these brands offer the security of a large company behind the warranty, customer service and, in some cases, better equipment. On the other hand, you can usually get a lot more equipment for your money when you purchase non-brand name systems or "white boxes." These products are usually built by smaller, less-well-known vendors, however, they usually still contain name-brand parts. Remember that they don't come with a big-name company backing their warranty, except on some of the individual parts. You can find companies that offer a warranty and technical support if you check around. In any case, "white boxes" generally all use the same name-brand equipment inside.

Software applications, on the other hand, are not always one-size-fits-all. Software, because of differing needs and development costs, is more quickly standardized by the manufacturer and then tweaked by the user rather than made to order. If even the most popular software for your industry doesn't offer all the features you need, you can try to manipulate the version you already own. When you do this, however, you risk losing all the changes once the manufacturer upgrades the software, if your changes are not compatible with the upgrade.

Another option is to build your own software. Creating your own software however, takes a lot more time, planning and management to develop than custom-built hardware. It's usually cheaper and faster to adapt an existing software package to your needs than to build a software application from scratch.

IV. Guiding Principles

Here are some basic rules to follow when considering cost:

✓ **Managing the implementation**
  – Keep the consultant/staff within budget and timeline.

✓ **Tips on stretching the dollar**
  – Don't be too frugal — you get what you pay for. Cheapest is not always best and the project can end up taking longer or requiring someone else to come in and fix it after the fact.
  – Prepare a budget. If you have budgeted a particular amount for each expense, you are more likely to stay within your means.
  – Ask the consultant or your IT department for a cost estimate — without telling them your budget. (If you do reveal your budget, it will cost you at least that and then some.)
  – If cost is an issue, buy only what you need for now and add frills later.
  – When you are planning a budget, add another 25 percent to 30 percent in case there are unexpected changes.
  – Consider leasing equipment. It has a lower initial cash outlay, there are options to add new equipment, buy-out options are available at the end of the lease (though this isn't recommended), and business expense write-offs help reduce the overall cost.

UNIT 10:

Training

Learning Objectives:

By the end of this unit, learners will be able to:

✓ Determine which staff members should be trained first, who will conduct the training and where will it be conducted.

✓ Explain the benefits of training staff to handle the new technology efficiently.

✓ Set certain expectations about what level of expertise staff should have after training and how that will translate to a more efficient work environment.

✓ Explain how frequently training should be done.

Now that you've purchased all this wonderful and expensive equipment, the consultants are packing up their bags and cashing their checks and staff are trying to get back to the normal flow of work. But before this happens, they need to be trained to use the new technology.

You should develop a budget for training even if internal IT staff will be conducting the training. Factor in what it would cost to send staff to classes or bring a trainer on-site.

There are many compelling reasons for creating a training program:

✓ Training raises the staff's cumulative skill level.
✓ A better-trained staff means you won't need to hire someone new when new skills are needed for a project.
✓ Training deepens staff's critical skills.
✓ Training improves the knowledge base of each staff member so that when a project needs more resources, there are more staff available to help.
✓ You can add a knowledge assessment procedure that will help to determine how much and if any additional training is needed by your staff. This training procedure can be linked with an employee's annual performance reviews to measure training progress.

I.   Who Gets Trained?

The choice of who should be trained is not as easy to make as it may seem. Do you train the whole office to use the new technology or only those who will use it? Who should be trained on using the new network and how much training should they receive?

Whoever will be using the new technology should be trained first. They in turn can train other staff. As for those who don't directly use the new product, there are a couple of considerations to bear in mind. Some upper-level staff or directors may at first be unwilling to use the new technology. Their assistants may end up printing out e-mails for hard-copy reading or entering information into a database and running the reports for their boss. Depending on the agency and individuals that need to be convinced, a presentation including the savings in time and money that the switch in technology will create could be motivation for the embrace of technology. Another option to convince them could include showing them how much time and effort is saved when technology is used efficiently. An example of this would be the creation, editing and printing of large documents.

Once those who will use the technology have been trained, you should train the most technically oriented person in the office and have him/her train everyone else — a train-the-trainer approach. Training sessions should be scheduled for times that are convenient for everyone in the organization.

II. Train On- or Off-site?

When considering whether to hold training classes on-site, there are a number of things to think about. The first factor is the number of people who need training. If there isn't sufficient space or a large enough conference room to accomodate everyone, choose off-site training. For specialized applications that few people will use, hire a consultant and choose external facilities. Also, if your office doesn't have enough equipment, you should choose outside training facilities. Some of the costs to consider for off-site training include hotel and travel expenses and meals — in addition to the training fees.

III. Train Immediately or After Test Time?

It's usually best to train staff to use a new system before the system is implemented. This prepares them to work as soon as the system is ready. Training should be done close to the launch date so staff don't forget what they've learned. However, follow-up training is a good idea. And it's likely that trainers will be needed after the implementation to answer questions.

In some cases, however, training staff immediately after the installation is a bad idea as the staff have not had enough time to become comfortable using the new system and would only become confused. In this case, training should be conducted some time after implementation. Another option, if time allows, is to set up a "dummy system" or parallel demonstration system for hands-on training.

Another way to ensure successful training is to ask staff how they learn best. Some options are remote training done over the phone or the Internet, books or manuals, and hands-on training using the new technology. If time and budget allow, try to provide the type of training staff like best.

IV. How Often is Training Needed?

Manufacturers continually upgrade their products and services, so training should be an ongoing event. After the introductory training, ongoing training probably won't cost as much or take as much time. You can use books, the vendor's website or the application's help site or hire experts to answer questions for the continuing training. In general, whenever an application changes, training should be offered. And as staff become more advanced in the use of an application, they should receive more training. To keep support and training costs down, you might consider having a resident expert on a particular product who receives training from the product vendor and then in turn trains staff.

V.   What Should a Trainer Provide?

A good trainer should provide manuals for reference, continuous support, and remote or onsite service options either before or during training sessions and upon request.

UNIT 11:

Maintenance

Learning Objectives:

By the end of this unit, learners will be able to:

✓ Explain the importance of having a maintenance plan for equipment.

✓ Describe some basic maintenance practices.

✓ Determine when to replace or upgrade equipment.

Once the new technology is in place and staff know how to use it, you should consider how to keep it going. Much like a car needs regular oil changes and service maintenance, a computer network needs regular updates and maintenance checks. Otherwise your agency could face having to prematurely rebuild or replace its equipment.

To prevent this, have staff with the knowledge and time handle the responsibility of maintaining the new equipment. If after assessing their workload, you determine that staff don't have the time or skills to maintain the new system, you can purchase a maintenance plan/warranty from the vendor. Warranties on equipment should usually be purchased at the time of equipment purchase, however, maintenance plans can usually be entered into after installation of the equipment.

The benefit of a maintenance plan is the ongoing continuous support provided by the vendor or product expert. A maintenance plan also can help you prevent extended downtime because regular maintenance checks can uncover and avert problems. Although maintenance has a price, it's usually minimal compared to the cost of replacing the whole system. Routine maintenance can be accomplished with minimal to no intrusion into the workday since a lot of it can be done remotely.

You should also consider including a schedule for hardware replacement with your maintenance plan. You should decide which machines need to be replaced and when, and how many at a time. This planning helps soften the budgetary blow of technology upgrades and allows your agency to continually obtain the latest technology.

Every three years or so is a good timeframe for equipment replacement, allowing your agency to keep pace with technology changes and accommodate changing staff and job responsibilities.

If equipment is leased, your lease timeline will determine when equipment is replaced.

For software, regular upgrades and product and feature enhancements are common. By staying up-to-date with current versions, your agency will be able to accomodate vendor technical support and ongoing assistance.

I. Maintenance Cost

The purchase of computer hardware is probably the cheapest part of a new technology pur-chase, since installation, training and maintenance costs will exceed the computer purchase price several times over. But keep in mind that it's not just about cost. Consider the time it will help save as you service your client base and how efficient, effective and productive it will allow you to become when it's implemented and maintained properly.

II. Surprises

To avert unpleasant surprises, you should have additional resources, such as a spare hard drive, a power supply and additional toner, or a budget for acquiring additional resources or paying for emergency repair services when needed.

Answers to Pre-training Assessment

The following answers to the Pre-training Assessment are designed to provide a brief recap of the material in this training manual.

Pre-training Assessment

1. **(True)** **False** — Technology is the application of science, especially toward industrial or commercial objectives, and/or the scientific method and material used to achieve a commercial or industrial objective.

2. **(True)** **False** — Reduction in the time required to perform activities is a benefit of implementing technology.

3. **(True)** **False** — Frequent changes in technologies are a drawback of implementing technology.

4. **True** **(False)** — A network is another term for a T.V. station.

5. **(True)** **False** — Training is important because it raises the cumulative level of your team.

6. **True** **(False)** — A file server is a server that stores files.

7. **(True)** **False** — It is important for your agency to have a business plan.

8. **True** **(False)** — It is not necessary to maintain your equipment.

9. **(True)** **False** — Microsoft Access is a database management tool.

10. **(True)** **False** — Adobe Acrobat is used for document creation and to share documents over the Web.

11. **True** **(False)** — It is okay to send a document to your funders in a format that is incompatible with their application.

12. **True** **(False)** — It is important to have a budget because it is a mark of coolness.

13. **(True)** **False** — A project should be broken out by phases to help track a project's progress and identify completed tasks.

14. **True** **(False)** — If someone had a large business and had to implement a network, she would choose the peer-to-peer network type.

15. **True** **(False)** — Microsoft Excel is a word-processing application.

16. **(True)** **False** — A website is good to have because it establishes an organization's presence on the World Wide Web and helps you reach a large audience.

17. **(True)** **False** — One of the advantages of Web-based technology is the ease of access it offers to information.

18. **(True)** **False** — Another characteristic of Web technology is that it makes a client's application vulnerable to security breaches.

APPENDIX A:
Glossary

Adapter: A piece of equipment that acts as a power jack and is used to connect computers in a network.

Application: A work activity or function performed by a software program. Software programs are generally used for multiple applications such as donor tracking, targeted and general mailings to donors, fundraising campaigns, etc.

Bandwidth: Determines the amount of data (capacity) that can travel in a given time period (speed) through a circuit.

Backbone: A central network that connects other networks together. Companies such as MCI, Sprint, UUNet and AT&T all run central backbones.

Balun: A piece of equipment that is used to isolate a transmission line and provide balanced output current in a network.

Bridge: A combination of hardware and software that connects local-area networks (LANs) together.

Broadband: A transmission medium capable of supporting a wide range of frequencies, typically from audio up to video frequencies. It can carry multiple signals by dividing the total capacity of the medium into multiple, independent bandwidth channels, where each channel operates only on a specific range of frequencies.

Cable modem: Internal PC device that receives cable signals. Cable modems include pieces of routers and hubs and they run network-management and diagnostic software.

CD-ROM tower: An upright central processing unit, which contains CD-ROM drives.

Central processing unit (CPU): The "brain" of the computer.

Client: Any computer on a network that uses resources from a server is called a "client." Clients are sometimes called "workstations." A single computer can be both a client and a server.

Communications Service Provider: Communications services are provided by telephone companies, cable companies and Internet service providers (ISP). Telephone companies and ISPs offer ISDN connections. Cable companies provide the services necessary for cable modems. Telephone companies provide the remaining communications services.

Configuration: Software settings that allow different hardware components of a computer system to communicate with each other.

Data communications network: All the equipment required to link computers in your organization so that they can share information.

Dedicated Digital Service (DDS): Dedicated lines. A digital, private line, data transport, flat-rate service with no usage or toll charge. Uses include LAN-to-LAN interconnection, telecommuting, point-of-sale transactions and video conferencing. There is a recurring monthly charge plus a fixed mileage charge from your "home" telephone office to the telephone office connecting to the host location.

Device: Anything you can plug into a computer network.

Domain naming system (DNS): A hierarchical naming system that uses a combination of text names separated by periods to create a unique name for websites and Web-based services.

Domain name: The name of the site your computer belongs to. Domain refers to a set of computers on a network that have been assigned to a group. For example: xxxy(hostname)@abcd(domain name).org.

DSL: A continuum of last-mile transport systems called a digital subscriber line, which can carry data at a rate of about 1 to 6 megabits/second over existing copper lines.

Dumb terminals: A device, often equipped with a keyboard and a video display, through which data or information can be entered or displayed. The information entered is usually stored and processed on a server as opposed to locally on the terminal.

E-mail: Electronic mail. An Internet service provider (ISP) usually offers this tool, which allows you to send and receive mail (messages) over the Internet.

Ethernet: A local-area network standard defining a physical medium and its method of placing data or packet signaling on a cable.

File server: Server whose primary purpose is the storage of electronic files and data of all formats.

File transfer protocol (FTP): A method of transferring files from one computer to another over the Internet.

FTP server: A computer on the Internet that stores files for transmission by FTP.

Fault tolerance: Ability to troubleshoot problems.

Firewall: Software program that defends against unauthorized access to a network and provides several levels of defense for the most sensitive parts of a network. It does not protect against viruses or people with access to secure locations.

Frame relay: A fast packet-switching technology that offers the benefits of private lines and shares network products. For smaller organizations with expanding networks, frame relay offers cost-effective advantages in the areas of LAN interconnection, Internet access and SNA network transport.

HTML: Refers to Hypertext Markup Language and was the original format and standard for creating pages and information to be viewed over the World Wide Web.

HTTP: Refers to hypertext transfer protocol, the standard process used in the World Wide Web that enables users to link to websites.

Hard disk drive: Random access storage for computer data.

Host name: A name used to identify your computer on a network. The host name can be combined with a domain name to create your Internet address. For example: Xxxy(hostname)@abcd(domain name).org

Hot swap: A procedure that allows you to replace failed hardware (e.g., disk drive or memory card) or upgrade it without taking the computer off the network.

Hub: A device that connects cables from computers and other devices such as printers. Traditionally used with star topology networks.

IP address: A unique number used to identify each computer that is connected to the Internet.

Integrated services digital network (ISDN): A fast, digital data communications line that can be provided by most telephone companies. To be able to reap the benefits you will need to add a special card to your PC or attach an external device, and your Internet service provider must be able to provide an ISDN connection.

Internet service provider (ISP): A company whose service is your connection to the Internet. You use an ISP to connect to the Internet every time you log on. ISPs offer services that include connection, domain name registration, IP address, disk space, Web hosting, data transmission and website management.

Internet: All the computers connected on a global network, which includes an area known as the World Wide Web.

Intranet: Connects all of an organization's computers to each other, like an in-house Internet, for exchange of information. Requires a server, server software and Internet technology (TCP/IP Web browser).

Local-area network (LAN): Connects two or more computers within a limited physical area such as an office or a building. LANs typically consist of a number of computers, shared printers and shared directories and files.

Legacy system: Older computer systems and software.

Metropolitan-area network (MAN): A network that is spread out over locations within a given metropolitan area. A MAN is a network configuration that provides connectivity between separate LANs or workstations over longer distances than LANs but shorter distances than WANs. A MAN link also connects your LAN to the Internet.

Maintenance: Fixing or changing equipment, wiring and similar resources to prevent future problems. This process includes repair of hardware and preventive maintenance such as lubrication, cleaning and level adjustments of disk drives. This set of tasks is part of the technical support function.

Mailing list: A specific type of e-mail address that forwards all incoming e-mail to a list of subscribers interested in a specific topic.

Mail server: A central computer connected to the Internet that provides mail services for mail clients. A server that receives and stores incoming mail.

Memory: Saves computer data.

Migration plan: Plan for future growth of your technology network.

Modem: A device that allows computers to transmit information to one another through an ordinary telephone line. A modem converts information from analog to digital and vice versa.

Net: A network or, when capitalized, the Internet itself.

Network: Computers and related equipment, such as printers, that are connected to each other. It also refers to the connection to the Internet.

Network computer: A computer that lacks a hard disk (storage) and instead gets all its data over a computer network like the Internet.

Network hub: Some networks require that each computer be connected to a piece of equipment that strengthens the data signal as it travels through the network. This piece is called a "network hub." The hub also connects all the computers to each other.

Network interface card: This is where the network cable plugs into the computer. In a typical network, each computer contains a network interface card (NIC), also known as a network adapter card.

Network management: Refers to network oversight — from troubleshooting network problems to planning additions. It includes tasks such as documenting network topology, setting up routers, hubs and communication services, and managing the operation of all devices on the network. This set of tasks is part of the technical support function.

Network protocol: A standard process that enables computers on a network to "talk" to each other using a common software and hardware format for transmission. When you configure your computer to connect to a network, you must add the appropriate protocol(s). For example, if you are connecting to your local-area network, you will need to add the protocol used by your LAN. If you will be connecting to the Internet, you will also need to install the protocol for the Internet.

Node: The technical name for each piece of equipment connected to a network.

Open Database Connectivity (ODBC): ODBC is a standard for accessing different database systems. There are interfaces for Visual Basic, Visual C++ and SQL. The ODBC driver pack contains drivers for the Access, Paradox, dBase, Text, Excel and Btrieve databases.

Operating system: The software that manages all application software on the computer. Microsoft Windows is the most commonly known.

Online: Connected to the Internet. Often people will say they are online, meaning they have access to the Internet and have an e-mail address, but they may not necessarily be connected to the Internet at that moment.

Peer-to-peer network (or peer network): One desktop computer links directly to another to transfer files, access a database or share other resources, such as a printer. Computers must share a common operating system. Peer-to-peer networking is built into the Microsoft Windows 95 and Windows 98 operating systems and Windows NT 4.0 workstations. No dedicated server or network software is needed.

Peripherals: Anything you plug into a network that is not a computer.

Platform: The computer hardware and software on which your computer system runs.

Remote access: External access, offered by more advanced networks, that allows users to connect to their network from another location, such as a home office. Non-networked organizations can use remote access software if the computers at the office and remote location have modems.

Removable storage: Floppy disk drives, CD-ROMs and similar equipment that store data and are removable.

Router: Connects networks together, controlling the routing of packets from source to destination, including alternate paths when necessary. Routers are more sophisticated than bridges.

Service patches: Software applications provided by original equipment and software manufacturers that is meant to solve performance problems or security issues found after distribution of an application or piece of equipment.

Switched multimegabit data service (SMDS): Similar in capability to ATM-switching technology but provides users with a scaled approach to purchasing high-bandwidth services. It provides an excellent migration path to ATM services as an organization's application requirements increase. Its uses include high-speed LAN interconnection, computer-aided design, imaging and multimedia authoring.

Simple Mail Transfer Protocol (SMTP): Used to send mail between servers and to send mail from your client to a mail server.

Scalability: The ability of your network to expand as needs increase.

Server: Refers to a computer and software that provide a service to other computers on a network. The computer stores information centrally and the software determines how to respond to requests from other computers on the network for access to the information.

Site: A place on the Internet. Every Web page has a location where it resides, which is called its site. Every site has an address, usually beginning with "http://."

Switched 56: A high-speed digital service that operates at 56 kilobits/second and is used for point-to-point connections. It consists of a line provided by the telephone company at a fixed monthly rate and usage charges on a per-minute basis.

Systems administration: Refers to tasks such as setting up new e-mail accounts, user accounts and new servers; updating software; and enforcing standard protocols, policies and procedures. This set of tasks is part of the technical support function.

T–1: A leased line provided by a data communications company. The speed at which data can be transmitted is 1.45 megabits/second. The line is made up of 24 separate channels of 64 kilobits/second (KBPS) each, plus one 8-KBPS channel for signaling and control. T–1 is used mainly for bulk connections, typically among ISPs or for private corporate networks.

T–3: A leased line provided by a data communications company. The speed at which data can be transmitted is 45 megabits/second. This single line is equivalent to 30 T–1 lines. Used for Internet backbones and large corporate networks. These lines are fiber-optic-based and make up the majority of links in public switched networks deployed by telephone companies.

Transmission Control Protocol/Internet Protocol (TCP/IP): The protocol for the Internet.

Technical management: Strategic and operational oversight of your technology.

Technical support: All the tasks necessary to keep a computer system operational. It includes network management, systems administration, user training, maintenance and security.

Telnet: A method of connecting to a remote computer over the Internet.

Topology: The shape of a network, which is determined by the way the cables physically connect network components. Topology is described as being shaped like a bus, a ring or a star.

URL: An acronym for Uniform Resource Locator. It's the address of a website and usually begins with "http://."

Virtual private network (VPN): Secures business-to-business communications between networks, systems, applications and users across the Internet, Intranets and extranets.

Wide-area network (WAN): A network spread out over two or more distant locations. A WAN is a network configuration that provides connectivity between separate LANs or workstations over longer distances. A WAN link also connects a LAN to the Internet.

WINS: Windows Internet Naming Service allows you to use programs that require NetBIOS protocol.

Web: Short for the World Wide Web.

Web browser: The tool (program) that allows you to surf the Web. The most popular Web browsers right now are Netscape Navigator and Microsoft Internet Explorer.

Web page: A page on a website. Every time you are on the Internet or World Wide Web, you are looking at a Web page.

World Wide Web (WWW): A full-color, multimedia database of information on the Internet. Like the name implies, the World Wide Web is a universal mass of Web pages connected together through links.

APPENDIX B:
Frequently Asked Questions

1. How would you define technology?

It's the means to improve or advance current processes and procedures through the application of science.

2. What are some of the benefits of implementing new technology?

It helps to reduce the number of staff required to perform activities, requires less time and costs less, which increases productivity and the efficiency of operations.

3. What is a network?

It's a collection of computers and related equipment such as printers within a local or wide area that share information and resources.

4. What is the difference between a peer-to-peer and a client/server network?

A peer-to-peer network is less secure and requires more management and is usually better suited for home or personal use. A client/server network is more centralized and easier to manage and provides more security.

5. What are some of the benefits of using a network?

A network allows for the sharing of printers, copiers, fax machines, phone systems, scanners and other types of equipment, for reduced cost and easier management.

6. What is a file server?

It is a central machine that can be used to store and share files and other applications.

7. What are some of the steps necessary to set up a website?

You must create a name for your website, then register that name with a domain name registrant, design the website and find an ISP that will host the site for you.

8. What is a word processor and what is it used for?

A word processor is an application that is used to prepare documents such as articles or letters. The documents can be printed on paper or viewed or stored electronically

9. How do you determine when to replace or upgrade computer equipment?

You should consider replacing or upgrading your equipment when the performance starts to degrade. The extent to which the performance of the equipment degrades determines whether it should be upgraded or replaced.

10. How often should you perform routine maintainance on computer equipment?

At least once a month, using updates and patches to applications provided by the manufacturer.

11. Can you use Microsoft Excel as a database management tool instead of Microsoft Access?

Yes.

12. What kinds of tasks is Microsoft Excel better suited for and which tasks is Microsoft Access more suited for?

Microsoft Excel is designed for accounting and financial reporting and is not designed to store large amounts of data. Microsoft Access is designed specifically for database management.

13. What are some things to consider when selecting a consultant to handle a new technology implementation?

The best way to select a consultant is through a referal from a trusted source. Follow up with a face-to-face or phone interview. It is important to check references, especially if the consultant was not a referral.

14. Do the staff need to be trained or can they learn new systems without it?

In some cases it may be possible for staff to learn certain applications without formal training, especially if new applications are similar to ones they've used before. However, it is preferable in other cases for them to be trained by a subject matter expert so they can acquire the necessary skills in the shortest possible time and learn helpful shortcuts to make their jobs more efficient.

15. Is maintenance a necessity or can I get by without it?

Even brand-new equipment has been known to break down shortly after installation. So it is highly recommended that you have equipment looked at regularly, even if nothing appears to be wrong.

APPENDIX C:

Referenced Articles

Technology Timeline: www.pbs.org/wgbh/amex/telephone/timeline/timeline_text.html

Network Timeline: library.thinkquest.org/C007645/english/3-network.htm

Dictionary: www.dictionary.com

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