

NGO Information Management

This article was originally drafted by Jennifer L. Tavis for the NGO Handbook.

One of the biggest operational challenges faced by organizations today is information management. No matter what your organization does, you can't operate without collecting, storing, sharing, and archiving information.

There is a dizzying array of information technology available to help you work more efficiently, but if you don't know how to select and use technology effectively, you can end up with tools that create problems rather than resolving them. Also, the fact that you can automate everything doesn't necessarily mean that you should. Tried and true information management tools like ledger books and filing cabinets still have their place, even in today's high-tech world. In order to select the right tools, you need to understand your needs, to research tools and solutions, to weigh costs and benefits, to ensure that the end users are comfortable with your choices, and to arrange for maintenance and support.

Overview

Understanding your needs

The first step for putting in place information management systems that work is to reach a clear understanding of what information needs to be managed. In other words, don't go out and buy a server because someone told you every office has one these days. Instead, think about what the office staff finds most frustrating and difficult. Does their email keep closing them out because their inboxes are too full? Did someone's computer crash, resulting in the loss of crucial data? Are you storing endless piles of floppy disks? This would mean that you have a need for centralized information storage and for a back-up procedure to ensure that data isn't lost. Purchasing a server is one way to address that need, but it isn't the only way. The better you understand the operational needs that underlie your technology choices, the better the chance that you will make successful choices.

Researching Tools and Solutions

There are numerous ways to research tools and solutions; to make an informed decision, it's best to use a combination of techniques.

For many of us, our first stop is the Internet. Conducting a search on the words that describe your need will give you a quick overview of the options available to you; however, there is often little to tell you about whether a vendor is reputable or how whether the information you find is reliable. Some websites offer user reviews of the products they sell, which can be illuminating, and it can be helpful to search technology review sites like www.cnet.com or www.zdnet.com to see ratings and compare products. You can also take advantage of technology resources specifically for non-profits, such as www.techsoup.org, www.grassroots.org, or www.npower.org. An Internet search, however, isn't the only way, or even necessarily the best way, to get the information you need.

Another approach, which can be quite effective, is to contact other organizations like yours to find out how they solved the same problem. They will be able to give you more in-depth feedback on what works and what doesn't. They will also be able to save you time by sharing the options they researched and didn't choose, along with their reasons why. If you don't know your peers at other organizations and are feeling uncertain about how to reach out, try contacting organizations like WANGO that have connections throughout the NGO community. While they won't necessarily have the answers to your questions, they may be able to point you toward others who have faced similar challenges.

If you are facing a particularly thorny problem, you may want to turn to a professional for assistance. Depending on your budget and the availability of people with the knowledge and experience you are looking for, you may opt to bring on a volunteer or hire a consultant to help you decide how to fulfill a particular information management need. There are organizations specifically devoted to helping non-profits and NGOs with technology for free or at a low costs (again, www.techsoup.org, www.grassroots.org, and www.npower.org are good US-based resources). You can also take advantage of the expertise of your donors, your board members, or even the population you are assisting. People

like to find ways to give that don't involve writing checks, and this can be an interesting and fulfilling opportunity for an experienced professional. If you do choose to bring in someone to help, be clear about your expectations and make sure that you stay engaged with the work being done to ensure that your needs are being met.

Weighing Costs and Benefits

While cost is usually not the most important factor in making decisions at an NGO, in the case of information management, it is generally a deciding factor. In order to make the best decision for the organization, it's important to weigh the costs and the benefits of proposed solutions. For example, if you are faced with a choice between purchasing a \$10,000 piece of software for managing donor information or hiring an additional person at \$40,000 annually to manage the spreadsheets and paper files you currently use, you'd be better off investing in the software. On the other hand, if you are conducting a survey and have a choice between investing in a \$1500 laptop for real-time data entry or simply buying \$15 worth of photocopies and pencils to be handed out and then having an intern spend a week doing data entry, the paper and pencils are probably the better option. For details on how to conduct a cost-benefit analysis, see the article entitled, "Project Management – Better Practices."

The End-Users' Needs

For major software and equipment purchases, it's important to bring the users into the decision-making process. Share product literature with them. Invite them to product demonstrations. Solicit questions and feedback from them. If test versions are available, have the users give the system a test drive. A good way to make your staff feel positive about an information management solution is to make them feel like they chose it. One of the biggest mistakes organizations make is selecting tools without user input, which results in resistance, resentment, and, at worst, wasted investment. If the users aren't involved, crucial aspects of what the system needs to do may be overlooked.

Maintenance and Support

When you purchase a product or service, consider what will be involved in maintaining and supporting it. Will the users need training? Is there a help line they can call when they have questions? Will the vendor provide software updates to address compatibility issues when the next version of Windows comes out? Is there a cost associated with calling technical support? Is a support contract available, and if so, what are the costs? These are a few of the questions you may want to ask a vendor when purchasing an information management product or service. If what you are buying is not adequately supported and maintained, then you are not getting the most out of your investment.

Productivity Tools

Productivity tools are the most commonly used software. This category includes word processors, spreadsheets, email/calendar/contact management programs, and presentation programs. Many organizations depend on these tools for almost all of the office work they do. These tools help us communicate. They help us manage our work. They help us store and analyze information. These programs are not specifically built for any industry. They are designed to be of use to everyone.

* Word Processors are used to create and edit documents. They have wide-ranging capabilities, allowing you to go beyond what you were able to do with an electric typewriter. You can insert tables and sort the information in them. You can set up links between various parts of a document. You can create mailing labels, form letters, catalogues, printed envelopes and more. The most commonly used word processing program is Microsoft Word, which is part of the Microsoft Office suite. If you are concerned about costs, or if collaboration is a major concern, Google Docs (www.docs.google.com) may be an alternative worth considering. It's available for free, and while it has fewer features than Microsoft Word, it has better collaboration functionality, allowing users to work on the same document at the same time across the Internet. However, if your staff does not have regular Internet access, Google Docs will not be a viable option.

* Spreadsheets have become one of the most crucial tools in today's workplace. The ability to sort and filter information and to do complex mathematical modeling makes them a vital tool in managing and understanding data, particularly quantitative data. Microsoft Excel is the most commonly used spreadsheet program and part of the Microsoft Office suite. Lists maintained in Excel can be imported

into other Microsoft programs. For example, you can import spreadsheet data into Word to create form letters, labels, or a catalogue; to do so, use the Letters and Mailings > Mail Merge function in the Tools menu in Microsoft Word. You can also import addresses from a spreadsheet list into Microsoft Outlook.

Data Collection Tools

The information that you manage needs to be collected in some manner. How you go about collecting it will depend on what type of information you're after and from whom. In most cases, a computer will be involved somewhere along the way. Even if you are reaching out to a largely illiterate population, you may be recording what you find in reports, transcripts, and spreadsheets. For literate populations, you can get paper forms with the information or even have them enter it themselves using forms on your website or using a terminal you've set up. The type of tool you need will depend on the volume and type of data you want to collect.

- * Web forms: You can gather information online using web forms on your website, which gather user input. You will need someone with advanced web design skills to set this up. The simplest way to do this is to have the information sent as an email to someone's inbox. A more complex option that saves labor is to connect the form to a database so that information you receive doesn't have to be re-entered by your staff in order to become usable.

- * Databases: An option that can be effective in some cases is to offer terminals where people can enter information directly into a database. Another approach is to have staff members collect information on paper, in person, or by phone and enter it into a database.

- * Paper: Despite the high-tech dream of a paperless world, paper is still a useful and cost-effective technology. Many organizations use forms, mailings, surveys and other paper tools to collect information.

- * Scanning solutions: If you are dealing with very high volumes of paper, you may want to consider a solution by which the paper gets scanned and stored as images, and then you process the images by categorizing and attaching keywords to them. That way, you can search for a particular image or category of images in future. There are sophisticated (and expensive) programs for managing this type of operation, or, for a budget solution, just use a regular scanner and put keywords in the file names for the scanned images. You can use your operating system file structure and search capabilities to organize the files and do look-ups. Be aware that image files tend to be large, so you may want to invest in a server that provides additional storage capacity.

- * Audio and video recording devices: It may make sense, depending on your approach and the population you are working with, to use recording devices to gather information. Make sure you think about media storage and durability, as well as electricity needs for the devices in question. Also, keep in mind that recording technology tends to change rapidly; if you are maintaining a sizeable media archive, be sure to have a plan and a budget for dealing with media obsolescence. When the recording medium you use starts to become obsolete (and it will), you will need to invest in transferring your archive to a more up-to-date, widely used medium (e.g., moving cassette recordings onto CD).

Data Analysis Tools

Once you've collected information, you need to be able to make some sense of it. You need to be able to see different views and different combinations of the information you collect. This section lists some of the tools you can use, from the least to the most sophisticated.

- * Paper: In the past, paper was the data analysis tool of choice. In today's world, while computers can make data analysis infinitely easier, there may be circumstances when they are unavailable or impractical. For instance, small grassroots organizations in the developing world may not have the money, expertise, or access to reliable electricity required for a computer. In such situations, the value of tried and true paper solutions should not be underestimated. For financial analysis, a ledger book is tremendously useful. For some types of quantitative analysis, a thoughtful, hand-plotted graph can give you the insights you need. If you are analyzing lists, tallies on each page will save you time and effort when adding up totals. If you are trying to deal with large amounts of paper, maintaining a well-organized filing system will simplify your task considerably. While analysis on paper takes more effort, in general, than analysis on a computer, the availability and affordability of paper, even in the most remote regions, makes it a tool whose usefulness should not be overlooked.

* Spreadsheets: The most basic functions of spreadsheets are sorting, filtering, and summarizing data. For the sophisticated user, they offer a wide range of additional functionality. Spreadsheets are very effective for mathematical calculation. They are limited, however, by how much data they can manage. If you need to analyze tens of thousands of records, a database would be a more appropriate tool. Also, very large or complex spreadsheets can be unwieldy and difficult to manage.

* Databases: If you have large amounts of data (10,000+ records) that you want to analyze, or if the data you want to analyze is very complex (for example, 50 items with 50 attributes each and 50 descriptive categories for each attribute), you'll probably want to put it in a database and analyze it using queries or reports. To set this up, you will need some technical expertise. A basic understanding of database principles and structure, along with knowledge of SQL, will be highly beneficial. If you don't feel you have the necessary expertise, consider seeking outside help. To do so effectively, give some thought to what views of the data you want. Write down what you want to see, or mock it up (for example, "column 1: city, column 2: population below the poverty line, column 3: total population, column 4: percentage of the population living in poverty"). Documenting your needs will help ensure that they are met.

Information Sharing

One of the most popular uses of information technology today is communication. The Internet, email, computer networks, voice over IP (VoIP), and videoconferencing are just a few of the communication technologies with which you may be familiar. To understand how and why these technologies are useful, however, we need to look more generally at the ways we share information and communicate.

Before the widespread availability of computers that are networked and connected to the Internet, we communicated through meetings, letters and the telephone. We shared information using directories, libraries and files. Technology makes communication easier and faster, but in the end, our needs are relatively basic when it comes to sharing information. We need to be able to ask questions, get answers, communicate ideas and share feelings.

Asking Questions and Getting Answers

Technology can assist you in a number of ways when you have questions to ask. Internet search engines like Google and Yahoo! allow users to search for the information they need using keywords. The more specific you can be with your keywords, the more likely it is that you will find the answer to your question. If the search engine doesn't provide the answer you need, you can try looking up the websites of organizations or institutions where someone might be able to help you with your question. Email addresses for inquiries are frequently posted on websites, allowing people with questions to make contact when the website doesn't give the answers you need. Online bulletin boards and forums allow users to post questions and receive answers from others who access the same webpage.

The Internet is a rich information resource if you know where to look and what to trust. Be aware, however, that much of the content on the Internet has little or no editorial oversight and it isn't necessarily trustworthy. Use common sense when deciding whether information is trustworthy. For example, consider whether the information makes sense, whether it is provided by a reputable source and whether it matches similar information you have found elsewhere.

Communicating Ideas

Technology today gives you new ways to share information within your organization and with the world at large. Within an organization, email and a computer network can be very useful. Email allows people to communicate nearly instantaneously without having to leave their workspaces. Computer networks allow users to share files and programs and to contribute to and benefit from a shared knowledge base. In communicating with the outside world, email and the Internet can help you connect with people across the world to share your organization's vision and goals. Having a website for your organization can help raise awareness about your organization and what it does. Email can be used as an effective marketing tool, provided you use it thoughtfully. It's an excellent way to reach out to donors or even to connect with the beneficiaries of your organization, provided those you are serving have regular access to the Internet.

Sharing Feelings

Sharing feelings is a crucial part of human interaction, and in the NGO world, facilitating the communication of feelings, reactions, and opinions is frequently a core aspect of the job. The community you work with needs to communicate its wants. Your donors want to share their good will. Your co-workers on the other side of the globe need to understand the urgency of a task you have assigned them. Communication technologies like VoIP and video conferencing can help to bridge geographical distance and allow communication to be not just informative but meaningful. Text-based communication tools like websites and email can also be used effectively to share feelings, but greater care is needed to ensure that the feeling behind the words comes across. Thoughtful use of images and graphics to supplement text can help enhance the emotional impact of your message.

Tips on Using Information Sharing Tools and Technologies

Now that you have a sense of why and how you might want to use technological tools for information sharing, let's talk about what the nuts and bolts. Please note that this section uses technical terminology and assumes a basic understanding of common computer and Internet concepts. If this section is too technical for you, don't worry. Your best bet is to find someone in your organization or your community who has some technical expertise, or to reach out to the broader NGO community for assistance.

*** Internet**

What you need

- A computer with a modem, network port, or wireless card
- An Internet connection provided by an Internet Service Provider (ISP), often for a monthly fee
- Browser software (Internet Explorer, Firefox, Netscape, Safari, etc.), which generally comes free with your computer or can be downloaded for free

Things to consider

- Not all information on the Internet is reliable
- It is important to protect your computer from the threat of viruses and other malicious code (See Information Security below.)
- While the Internet is a useful tool for gathering information, it can also be misused by your staff, so you may want to create an Internet use policy for your organization

*** Email**

What you need

- A computer with a modem, network port, or wireless card
- An Internet connection provided by an Internet Service Provider (ISP), often for a monthly fee
- An email account through a free webmail service (Hotmail, Gmail, Yahoo Mail, etc.), your ISP, a hosting account, or an internally hosted email server (the latter typically for very large organizations).

Things to consider

- Free email solutions are not necessarily secure, so you may want to opt for a paid service if you are concerned about privacy and security
- Tools like Microsoft Outlook and Lotus Notes allow users to download their email onto a computer's hard drive so that it is accessible even when the user isn't connected to the Internet
- Be strategic in your use of marketing emails in order to avoid being thought of as a spammer
- For a large organization, you may want to consider hosting your email on your own server for reasons of security and control

*** Website**

What you need

- A hosting account or web server
- Content (text, pictures, links, etc.)
- A readymade template or a site designer (who should know HTML at the very least)

Things to consider

- Readymade website templates are available from various websites, but they give you relatively little freedom to customize. If you want something specific, you need someone with a working knowledge of HTML and possibly Flash. If you want it to link to a database (for collecting names and addresses, providing in-depth information look-up capabilities, etc.) hire a professional.
- Free hosting is available but often involves displaying advertisements on your page. You are probably better off paying for a hosting account and purchasing the domain name of your choice.

*** Network****What you need**

- Computers with network capabilities\
- A router (your network traffic cop, a device that directs information through the network)
- A firewall (provides security for your network, and is sometimes combined with the router into a single device)
- An ISP (your connection to the Internet)
- Switches (If you have an office of any size, you'll need switches to manage the wired connections to each computer)
- Network cables (If you have a wireless router, the cables may be unnecessary; however, wired connections are generally faster and more secure)
- A server (Used for file sharing, data backup, shared databases, and other shared computing resource needs)

Things to consider

- Very small offices (under 10 computers) may not need a server. It is possible to set up what is called a peer-to-peer network, in which users can see on each others' computers file folders that have been designated as "shared".
- If you opt to set up a wireless network in your office, make sure you set up security on your wireless router by enabling SSID and WEP
- Large networks can be very complex and serve a wide variety of business needs. If your office has or needs anything more than the basics, work with a network professional to ensure your setup will meet your office's needs.

*** VoIP****What you need**

- An ISP (phone calls are routed over the Internet instead of over traditional phone lines, creating cost savings)
- A VoIP phone or phone system (There is a wide variety of technologies available for this, which are not addressed in this article, so further research is recommended if you wish to go this route)

Things to consider

- VoIP often has lower sound quality than traditional telephone land lines
- If your network connection goes down, you lose your phone service as well
- While the initial investment for VoIP systems is generally higher than for land lines, long-term it is often a less expensive option
- This can be an excellent option if you frequently communicate with people overseas, as this significantly reduces connection costs
- VoIP is location independent, so anywhere you and your phone equipment goes, your phone number goes with you

*** Video Conferencing****What you need**

- A phone connection
- Audio-visual recording equipment (cameras and microphones)
- An ISP
- A visual display (monitor or projector)
- A video teleconference system (VTC)

Things to consider

- Video conferencing can be complicated to set up and use

- The equipment involved is expensive
- Unless there is a strong reason why you need to see the people you are meeting with, this is probably not necessary
- If you only need this kind of capability once in a while, you may want to rent rather than purchase the equipment

This section has provided an overview of types of information technology and their uses. This is not intended to be an exhaustive reference or a step-by-step guide, but rather an introduction to the topics. For further information, please do further research or consult a professional.

Information Security and Storage

A major concern with today's information technologies is security. The technologies themselves are expensive, and the data contained on them is often sensitive and valuable. It is important to take basic precautions to safeguard your technology assets and the data you store on them.

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Computer Security

Computers are at risk from a variety of threats including viruses and malware, theft, physical damage, malfunction, and data corruption. A variety of approaches and protections are needed to protect against these threats.

* Password protection: One basic way to protect your computer is to protect it with a password. Any operating system you use will have an option for enabling password protection. If a user can't enter the correct username and password when the system is turned on, the user can't access the data on the computer. It is also good practice to set up your computer so that it asks for the password again after a period of inactivity. That way, if you are away from your computer for more than a few minutes, your computer is protected from unwanted intrusion. Standard operating systems allow this option as well.

* Access levels: Another way to safeguard your computer is to make a habit of using a user account that doesn't have full administrative access except when you specifically need to change settings or install new software on your computer. This helps protect against malicious code (viruses, spyware, etc.), as it prevents the installation of programs and the changing of key settings.

* Antivirus software: It is important to put antivirus software on your computer if you are using it to access email or the Internet or if you are plugging it into a network. It is important to choose a reputable solution and to ensure that you keep your virus definition subscription up-to-date to protect against new threats as they emerge.

* Operating system patches always keep your computer up-to-date with the latest updates and patches to your operating system. This will ensure that you are protected from security issues that have been identified and addressed by the manufacturer. It will also ensure that you have the latest functionality available on the operating system you use.

* Physical security: Be sure to take precautions against physical damage and theft, particularly with laptops, which are easy to lose track of because they are portable. Desktop computers are less prone to theft, but they can be damaged if care isn't taken to ensure they have proper ventilation and are out of the way of the user's feet. Locks, temperature and ventilation control, and thoughtful placement of equipment can go a long way toward fixing physical security problems.

* Data security: To safeguard data stored on a computer, regular backups should be made, and confidential files should be encrypted. You can back up your data to a central server, a writable CD, and external hard drive, or a USB drive. If the data you are backing up is confidential, make sure that your storage medium has the same security precautions in place (encryption and password protection) as your computer. Files or folders can be encrypted either by using the operating system's encryption capabilities or by using a third-party encryption tool. Encryption prevents any user from accessing data that has not been authenticated with the correct username and password. Be careful with encryption, as a forgotten username or password will result in the loss of all encrypted data.

* Power: Even in places where the power supply is relatively steady, it is good practice to plug your computer into a surge protector rather than directly into the outlet. This defends your system from

damage caused by sudden electrical surges. If power supplies are unreliable, you may want to consider a backup power unit called an uninterruptible power source (UPS). This is a large battery that not only protects the computer against surges but provides power to the system for a short period after electrical service is lost so that the system can be shut down properly.

Network Security

Network security provides a further layer of protection for computers and servers connected to the network. It helps ensure that your office's connection to the outside is safe and consistent.

- * Firewall: One of the most crucial ways to protect your network is by installing a firewall to prevent external access to your internal network, defend against external attacks, and filter out viruses. Firewalls sit between your office's network and the outside world. They are often combined with routers, so that they both secure the network and direct traffic. Firewall software is available for computers, but this is not the same as a firewall device that protects the whole network. Another feature of firewalls is that they generally allow you to place controls on what Internet content is available to those on your network. If you wish to prevent your users from accessing certain sites, you can use your firewall to block those sites.

- * ISP: You can also defend your network by coordinating with your ISP. Find out what kind of filtering and security they offer. If you want to prevent internal users from accessing certain sites or categories of sites, your ISP may be able to help you put the desired controls in place.

- * Servers: The same precautions that apply to computers apply to servers. Servers should always be password protected. As few people as possible should have access to them. If you have a server, you should conduct regular backups of crucial data, using a magnetic tape or a writeable CD. Your backups should be stored in a secure location offsite to ensure that you will be able to recover from a disaster and continue operation regardless of what happens to your office. You may want to purchase servers with redundant hard drives (RAID arrays) to ensure that if one hard drive dies, your server can continue to function without interruption. If you rely heavily on your servers, it may be worthwhile to have an offsite location where data is backed up and traffic can be rerouted in case of a disaster at your primary location. Servers can also be used to help manage security for computers on the network. With the proper software and configuration, they can be set up to push operating system patches and virus definition updates to users' computers on a regular schedule. When you set up a server to be used for file sharing, give some thought to how you want to manage access to shared files. Should all users have access to all file folders? Should some folders only be accessible to certain departments? Are there certain users who need different access than others? Operating systems for servers allow you to manage security on a group level, thus obviating the need to do a separate setup for each user, unless you genuinely need to give different individual users different levels of access.

- * Physical security: Put your network equipment in a locked room with proper ventilation and temperature control. Try to avoid putting network equipment in a multiuse space (for example, someone's office, the copier room, the kitchen). While this may not be practical in very small offices with very simple networks, it is a best practice. Network equipment can be very expensive, and it is generally critical to the daily operation of an office. Don't risk accidental damage resulting from a careless passerby or an especially hot summer day, or intentional damage or data theft from ill-intentioned, unauthorized people.

- * Power: If you have servers, you need backup power for them. In case of a power outage or surge, you need to be able to shut things down properly, or, in some cases, you may want a backup generator to ensure that you can continue to operate. This is particularly crucial in locations where electricity is unreliable.

Paper

In looking at your security situation, be careful not to overlook low-tech security considerations. You can have all the right computer security technology in place, but if you don't lock the cabinet with all the confidential files, you're still exposed. Also, you may want to consider scanning crucial documents and storing the digital images in an offsite location. In case of a disaster, you don't want to lose all of your critical paperwork.

Technology Management and Maintenance

Unfortunately, technology is not a once-and-done investment. It isn't enough to buy the right equipment and set it up with the right security. You also have to plan to maintain your technology and to replace equipment when it reaches the end of its service life.

Proactive maintenance of your technology will save you a lot of headaches and ensure that your technology is doing what you need it to. If having a full-time technology professional isn't an option, build a relationship with a service provider you trust. If possible, try to have an arrangement in which the same person or people provide the services you need consistently. That way, the person you are working with will have a working knowledge of the particular needs and concerns of your organization.

In addition to maintaining your technology, you need to plan to replace it. Technology changes quickly, and even if your old equipment is still functional, it may be obsolete. It is best to replace old equipment before it dies rather than waiting until something goes terribly wrong. Computers generally have a lifespan of three to five years. Servers and network equipment are generally fine for five to seven years. While your equipment may function longer, the performance it provides probably won't be adequate to your needs, and the longer you wait, the greater the risk of a major malfunction.

In terms of software, your antivirus subscription needs to be renewed annually, and you need to upgrade operating systems when support for those operating systems is discontinued by the manufacturer (for example, Windows 2000 is not longer supported by Microsoft). Also, if you use any special software in your organization (for example, Raiser's Edge), it is advisable to purchase annual support. This will allow you to receive updates to the software when the company releases them and technical assistance when things aren't working properly.

Conclusion

Technology can be helpful in running your organization, but only if you know how to use and maintain it effectively. Hopefully this article has provided you with an overview of office technology and what it can offer. This is not meant to be an exhaustive discussion of the subject. Whole books have been written on many of the topics covered here, as well as on many office technology topics beyond the scope of this article. If you need further information, consult the resources listed below or a qualified technology professional.

External Links

Technology Resources for Non-profits

- * www.grassroots.org
- * www.npower.org
- * www.techsoup.org

General Technology Resources

- * www.cnet.com
- * www.zdnet.com

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