chapter 6

Space, Hardware, and Security

Introduction

With the focus of the CTC determined and a plan for software acquisition decided on for software acquisition, the next issues facing the Steering Committee and the Center Director/Coordinator are space and general ambiance; hardware selection and acquisition; and risk management.

Physical Space and Furnishings

General Ambiance

Equally important as the available software will be the center environment. A successful center is one that people want to come to, want to be in, and want to return to. Some of the features that can contribute include:

An open, friendly reception area: Flyers about the center, membership applications (if appropriate), center schedules, and class registration information should be available and current. A person (paid or volunteer) should be there to welcome people and dispense information. Walls can be used to display photos of center staff and volunteers (with names and relevant information), lists of sponsors and donors, newspaper articles about the center and its participants. A community bulletin board where participants can post notices of meetings, services, or opportunities can further heighten the impression that this place is of, and for, the community.

Some comfortable, non-computer social and/or work space: Not everyone will want to spend every minute at a computer. Some may have to wait for a machine, others may have to wait to pick up children. Users may want to take time for a break, to relax, to exchange information with others, to read a magazine, or to do pencil & paper work in connection with their computer projects. If

possible, situate this social space within eye-shot of the center itself so that people who may feel shy (e.g., parents) can get a sense of what goes on and may be intrigued enough to participate themselves.

Computer placement to encourage sharing: Frequently, a participant may see someone else doing something interesting. "Hey, I'd like to learn to do that" is a response that you want to promote. Arrange computer stations so that users of one can see the screens of as many others as possible.

Space for collaborative work: Working together with a partner or small group facilitates learning and lessens the load on the center supervisor. Space the computers so that two or three chairs can be located around each.

Toddler area: Parents often have to bring babies or toddlers: If space permits, set up a play area for youngsters and engage a volunteer to supervise. If space is not available, try to make an arrangement with a nearby daycare facility so parents can drop kids off for the hours that they will be in the CTC.

Safety and accessibility: Everyone needs to feel that the center is a safe place to be and a safe place to come to and leave. This may mean exterior and interior lighting, it may mean handicap accessibility, it may even mean that a youth escort service needs to be part of center planning.

Temperature and air quality: Less a necessity for the equipment than for the participants, temperature can rise when lots of people and lots of heat-generating equipment are concentrated in a small space. Make sure that ventilation is adequate and install air conditioning in locations where daytime temperatures exceed 80 degrees.

Wall space: Fill the walls with participant work, or jackets from new software offerings, or "Club News" , or anything that relates to, honors, or informs the participants. Encourage participants to create special holiday or project displays. Organize a committee to take on this responsibility and make sure that displays are updated or changed periodically.

Staff space: It is important that center staff (paid and volunteer) have space to call their own. This can be a desk, or a room. But there must be some space.

Amenities: Think about where participants will hang coats or lodge bookbags and other personal paraphernalia. Provide recycle bins for paper (centers generate lots of paper waste). Don't allow food or drink at computer stations. Post this and other center rules prominently.

Personal files: Provide filing space for participants who may wish to maintain an individual data disk or printed (hard copy) versions of work in progress.

In summary, do everything you can to make the space serve the participants' needs. An advisory committee that includes participant representatives from various age groups will be invaluable in identifying ways to improve center ambiance, service, and software library.

Where Should the CTC be Located?

Much will depend on the sponsoring organization. If the CTC is an expansion of existing services within an agency such as a Y or community center, that organization may already have space in mind. A housing complex may have common space or a vacant apartment that can be allocated; a library, religious, or educational organization may be able to rearrange space usage to accommodate a CTC.

These same entities may be able to provide space to an independent group wishing to start a CTC. Storefronts and trailers are other possibilities. One CTCNet affiliate in Los Angeles heard that a gas station was closing down and persuaded the fuel company not only to give them a long term lease, but to fund the needed renovations.

Accessibility is the key. People need to be able to find the place easily, and they need to feel that they can come and go without expense, without anxiety, and without physical obstacles. This means ramps as well as steps, elevators in addition to stair wells. It means a well lit exterior. It means a location central to the intended participants; it may mean easy access by public transportation.

Another key feature is cost. Free space with no strings is great, but rare. More likely is a case where an existing agency provides space and in return the CTC agrees on a certain amount of use by participants at that agency and perhaps a certain amount of training for agency staff.

How Much Space is Needed?

There must be room for computer stations (20 square feet per station), a reception area, office, relaxation / work areas, and general traffic. Restrooms must be included or conveniently available and there must be a way to accommodate strollers, coats, and other personal belongings.

In addition, it makes sense to think about possible expansion. Look for space that is large enough to allow additional computer stations together with the necessary additional staff.

To get a rough idea of how many computer stations it will take to serve the number of participants you anticipate, divide the intended number of participants by the antici-

pated number of hours per week that the CTC will be open. For example, based on serving 200 people each week during 40 hours of open time, 5 computer stations will give each attendee one hour per week but if the same number of people are expected to come every day for an hour, you'll need 25 stations.

Consider your staffing plan as well: a single teacher/supervisor can handle up to 10 stations assuming one or two people using each. And, of course, your budget: for new hardware, about $1500 per system (see Hardware, below).

What About Electrical Connections?

The advice and assistance of a technical expert will be needed to determine and plan the CTC's exact wiring configuration. The following should be part of the plan:

- Floor and wall outlets for computers (maximum: 6 systems per outlet) and for printers, scanners, and copiers.
- Telephone connections for telecommunications, and for reception and office telephones and fax machines.
- Wiring for local area networks (LANs).

Furniture & Furnishings

The reception area:

- Sign—outside and on the door—telling people where they are
- Desk and chair for reception personnel
- Chairs or benches for waiting people
- Files for participant records
- Sign in computer or other mechanism
- A large wall clock
- Display area for CTC news, programs, membership advice, etc.

One CTCNet affiliate mounted a large local area map on one wall of the reception area and encouraged each participant to place a pin on his/her home location. Not only was this an attractive display, it also encouraged a sense of personal ownership among participants, and it made a simple and clear method of informing visitors about where participants came from.

The computer area:

- Tables for the computers and other hardware. Those designed for the purpose often have sliding shelves bringing keyboards to the proper height for easy use, and may have troughs to contain the various cables that otherwise have a messy appearance. Built-in counters are more expensive and don't give you the flexibility of changing your arrangement as experience dictates.
- Consider one or two rolling carts for computers. These can be wheeled into areas of greater privacy for those that need it. They can also be wheeled to other places in the building for presentations, demonstrations, or special work.
- Chairs for participants (2 per computer) need to be adjustable if you expect a mixture of children and adults. They also need to be comfortable (try before buying). A caution though, children can turn chairs on wheels into bumper cars!
- Files, cabinets, and shelving for software, supplies, participant records and work-in-progress.
- Indirect, glare-free lighting.
- Bulletin board space for participant work and project display.

The office

The CTC staff needs a professionally equipped workspace:

- Desks, chairs, files, supply cabinet(s), shelving
- Administrative computers with telecommunications capability
- Telephone(s), fax, copier

Hardware

While software represents the "content" of your program, hardware is the "vehicle" by which participants have access to that content.

Some Definitions

- **System -** a system generally includes the computer itself with internal and external disk drives, a monitor (newer monitors generally support color applications, older monitors generally don't), a keyboard, and a mouse.

- **Platform -** This term refers, usually, to the company that pioneered a particular kind of computer. Current "platforms" include Apple/Macintosh and IBM PC. Many companies manufacture systems with either (and in some cases) both platform features.

- **Disks** - The medium on which computer software and data are stored, disks are also used to record data generated by computer users. External disks usually come in 3.5 inch size with a capacity of 800 kilobytes (K), 1.4 megabytes (MB), or 2 MB. Zip drives made by Iomega have at least 100 MB of capacity and CD-ROM disks and DVDs store a considerably greater amount of data.

- **Disk Drives -**

    - A "hard" disk drive is a disk sealed inside the computer that stores the computer's operating system as well as software and data. Current system models include hard drives that can store 10 gigabytes or more of software and data. Each gigabyte is 1000 megabytes.

    - External drives allow you to insert software and data disks. You can then either transfer (load) the software onto the hard drive or run the software directly from the external drive.

    - CD-ROM drives enable the computer to read software applications from a compact disk (CD-ROM drives can even play music CDs and machines equipped with CD-ROM drives are also equipped with speakers).

- **Servers -** A server is a computer that provides services to other computers on a network. These services may include access to centrally stored programs or data files, routing of email, and/or sharing of a telecommunications line or of peripherals, such as a printers or scanner.

- **Local Area Network -** When a number of computers are connected to a single server, the result is called a local area network or LAN. There are also peer-to-peer LANs in which no particular computer is designated as a server, but any or all may be set up to permit file sharing.

- **Printers -** Printers are an absolute necessity from the very beginning. Even if the CTC is operating a pilot program, a printer will be needed to print out work (make a "hard copy"). Printers can be connected to several computers (even without a LAN) since they have their own internal "memories" and thus can receive data and print it later. Some printers can handle varying platforms, others are platform specific. Like copiers, printers require toner cartridges. The cost of cartridges and the number of copies that can be made from them will be important factors in making purchasing decisions.

- **Modems -** A modem is a device that enables the computer to send and receive data over telephone lines and to communicate with other computers or to gain access to the Internet. Modem capability is measured in bits per second (bps) or kilobits per second (Kbps). The higher the rate, the speedier the data transmission. While text reception is possible even at 300 bps, for most CTC purposes, it would be advisable not to purchase modems slower than 56 kbps.
- **Peripherals -** This term encompasses all hardware that is not part of a system package. Printers and modems are, in fact, peripherals. They are so necessary that they are treated separately. Other peripherals especially needed for multimedia publishing include:
    - **Scanners -** hardware that digitizes images (photographs, newspaper articles and advertisements, drawings, artwork, etc.) for direct transmission into the computer.
    - **Digital cameras** - these record snapshots on disk rather than film and therefore can feed images directly into the computer.
    - **Camcorders** - With the correct software, video sequences can be played directly into the computer and integrated in multimedia production.
    - **Microphones -** allow voice input to the computer. Some software programs will take voice commands. Multimedia production may require "voice-over" narrative or dialogue.
    - **Music synthesizers** - make it possible to compose and integrate original music with multimedia production.

New vs. Recycled Hardware

Although the availability of new hardware may be a draw for participants, there are reasons to consider used or recycled systems:

The pros

- available for free or for far less cost
- sometimes easier to use (less gimmicky)
- often fully capable (at one time were "state of the art")
- even new systems will be "old" in a matter of months

- can be used in combination with new for limited functions:
    - client database and attendance records
    - dedicated telecommunications stations
    - running software drivers for the LAN server

The drawbacks

- the "hand-me-down" impact
- may not be able to run newer software versions
- may be difficult to find replacement parts and/or supplies

Platform

Hardware choices begin with platform: that is, will your center be Macintosh-based, or PC-based, or will it offer a variety of hardware? The platform selected will determine what versions of commercial software are needed or vice versa.

Macintosh-based?

- easier to learn to use
- more flexible file naming
- preferred by many printers and graphics professionals
- predominates in K-12 schools

PC-based?

- predominates in the business arena
- lower cost for equivalent capacity

Mixed platforms?

- offers participants broader skill development
- broader software availability

Note that there are now computers on the market that can read (use) both Macintosh and PC-based software.

Capacity and Capability

The hardware must be able to run the software you're planning to use. You will have a list of these requirements as a result of your work in Chapter 5. The following are general guidelines:

- Internal hard drives with at least 6 gigagabytes (GB or "gigs") of disk capacity are desirable for newly purchased equipment. For recycled hardware, you may need to purchase a separate hard drive.
- External floppy disk drives should accommodate high density (HD) disks. With recycled hardware, there may be two varieties: older machines with 5.25 inch drives and newer ones with 3.5 inch drives. It is increasingly difficult to find software for 5.25 inch drives.
- CD-ROM drives are needed to run CD-ROM based software which means almost all multi-media software (multi-media includes video sequences, still pictures, and sound). These drives may be built-in or purchased as an accessory in most cases.
- Random Access Memory (RAM) should provide at least 32 MB of storage; more is preferable. Additional RAM can be purchased for older machines.
- Color monitors (standard with new machines) are essential for the younger crowd or for multimedia production or for CD-ROM software.
- Keyboards (standard with most systems) with special features can be purchased separately. The "ergonomic" variety is likely to slow touch typists but may help in the avoidance of carpal tunnel syndrome.
- Mouse alternatives include track balls and touch pads. The "mouse" advantage is being able to substitute a working one for a dysfunctional one (touch pads are built-in). Since mouse balls are easily extracted and may leave the CTC in pockets of youngsters, consider the purchase of optical mice, which also have the advantage of not deteriorating due to dust build-up.

Necessary Peripherals

- **Printers—**one for every 4-6 computer systems (these can be linked through a server)—are absolutely essential. These are some of your choices:
  - Laser - for business quality printouts
  - Ink-jet - cheaper and adequate but let the ink dry before touching the print!
  - Color laser - not needed except for professional work

  - Color ink-jet - economical to purchase, expensive to operate because of the cost of color cartridges

- **Modems -** necessary for telecommunications. Because telecommunications standards are changing so rapidly, an external modem may be preferable to one built into the computer. If graphics transfer is expected, modems should transfer data at a rate of at least 28.8 kbps.
- **Copier -** participants often want multiple copies of their work. The cost of copying is less for a copier than for a printer. The CTC will probably need a copier for office work anyway.

Necessary Supplies

Your planning should include secure storage areas for the following:

- Data disks for participants. Do not allow participants to bring in and use their own disks or software. Outside disks may be contaminated with viruses (see Risk Management).
- Extra ink and/or toner cartridges for all printers, copiers, and fax machines
- Back up hardware
  - Extra mice (and mouse balls)
  - Extra cables
  - Any extra keyboards and monitors that you can store

Optional Multimedia Equipment

Almost a necessity for personal publication and production, add these as your budget allows:

- **Flatbed scanners -** to digitize photographs, newspaper articles, and other print materials so that the computer can reproduce them for editing, inclusion in documents, etc.
- **Camcorders -** to create video sequences for web pages and other multimedia productions (may require special software as well).
- **Digital cameras** record your snapshots on disks that can be read directly into the computer.
- **Microphones, speakers, and headsets -** to integrate spoken sound
- **Midi-boards or other sound-digitizing equipment** for musical effects

Optional Telecommunications Equipment

Should community computing centers use modems and telephone lines, or higher speed forms of telecommunications access? The answer will vary with the shifting availability and pricing in different parts of the country of faster alternatives, such as ISDN, frame relay, ADSL (http://www.adsl.com), cable, and T1 lines. For example, there is more than ten-fold regional variation in the price of some ISDN services.

Here's the kind of solution that could be appropriate in some locations: Use a 128K ISDN line to connect a local area network to the Internet, using a 12 port 10BaseT hub to provide Ethernet backbone for the network, with a router and CSU/DSU that is expandable and can support a variety of communication devices... But, for most Centers, regular phone service via modems is likely to be a good choice for some time to come. For related general info, see http://www.sils.umich.edu/Community/tech.html.

Risk Management

Risk management encompasses issues of security for the CTC and insurance of the CTC property, employees, and the public. The Steering Committee should investigate and examine any local regulations that may be germane to risk management and incorporate them in its planning.

The best way to minimize risk in a CTC is to promote a sense of ownership and pride in the CTC among its participants and in the community at large. Certain routine measures can, however, be taken to secure the CTC, its staff, visitors, and equipment, and thus protect the CTC from unrecoverable loss and from certain types of claims.

Risk to systems, software, & data

Center management should be aware that there are risks to data and content on disk drives as well as to life, limb, and equipment. To address risks to data and software, the CTC should:

- Prohibit the use of disks or software brought in by participants. Install virus protection software on all systems (a virus is a piece of programming introduced via external disk or through telecommunications which has deleterious effects on systems, servers, installed software, and data).
- Educate participants about the dangers posed by viruses and the effects that virus introduction could have on the ability of the center to function.
- Encourage CTC staff and participants to monitor internet advisories regarding new viruses that may enter the center's system through internet usage.

Insurance policies that guarantee against loss of data and software due to viruses are available, but are expensive and thus not recommended to CTCs that take reasonable precautions such as those outlined above.

Risk to life, limb, and equipment

Damage or harm could come to the CTC building/room/space, its hardware, software, furnishings, personnel, and participants. Such harm includes theft, vandalism, accidents, aberrant behavior, and natural disasters. For example, an overhead pipe may burst, putting a number of systems out of operation and damaging clothing and personal possessions of participants. Someone may trip over a cable and fall. Or a participant (or staff member) may have cause to claim sexual harassment or child molestation.

Establishing a risk management program means first, treating the risk as real; second, establishing preventive measures designed to minimize risk; and third, insuring that staff and participants are knowledgeable regarding those measures and do their best to follow the specifics of the preventative program.

Examples of preventive measures include but are not limited to:

Minimizing the opportunity for accidents

- Establish rules of behavior such as "No Running. No Ball-playing. No Food or Drink by the Computers." Post these rules in an obvious place. Make sure all CTC users are familiar with them (if necessary, read the rules out loud to them). Make certain that staff (including volunteers) abide by and enforce the rules.
- String cable over the ceiling instead of on the floor. Contain extra cable length in bins or behind stations.
- Have available roll-out carpet or mats by any outside entrance.
- Use power surge protectors on all systems.
- Regularly check any overhead installation of plumbing or wiring for defects.

Limiting harm to employees and the public

- Provide escorts for any person leaving the building after dark.
- Provide escorts for any senior citizen coming to or leaving the CTC.
- Ensure that more than one person staffs the CTC in the evening.

- Arrange for additional police attention to the CTC neighborhood (offer classes for the police).
- Hire a security guard, if appropriate.
- Educate all staff and volunteers as to appropriate behavior with young children and persons of the opposite sex.

Minimizing opportunities for theft and vandalism:

- Limit, and maintain a list of all people who have keys to the CTC.
- Change the locks periodically and immediately after any employee is separated involuntarily.
- Install a buzzer system and keep the CTC locked otherwise.
- Secure computers, keyboards, printers, and other hardware to desks or tables.
- Lock all portable equipment in closets when not in use.
- Store software backups in a secure space or off the premises.
- Keep the lights on at all times when the CTC is not in use by participants.
- Install an alarm system.
- Install security cameras inside and/or outside the CTC.
- Consult with local police for additional suggestions.

Once the risk management plan has been determined, distribute copies of the plan to all staff, assigning and scheduling routine implementation.

Insurance Coverage

Before purchasing any insurance, the Steering Committee should consult the local fire department, planning office, and health department to learn what regulations will govern the CTC. These may include fire or zoning codes, occupancy limits, or cleanliness regulations.

A CTC can insure its employees, visitors and property by purchasing an insurance policy or by self-insurance. Self-insurance requires the CTC to set aside a certain amount of money to cover any claims against it and to protect CTC employees, visitors and property from damage or harm.

When a CTC rents or leases space, the owner may have property insurance. In all likelihood, such insurance will have to be augmented by the CTC to cover staff and CTC property.

Generally, insurance coverage applicable to a CTC is of 3 types:

Liability insurance

- **Definition.** Liability insurance protects a business against lawsuits and other claims arising from harm to persons on the business property. In general, a liability insurance policy contains a yearly maximum coverage. This means that the insurance company will not pay any claims that exceed a certain amount within a year.
- **Coverage.** A commercial general liability policy includes personal injury claims (such as slips and falls), fire damage, and medical payments. Liability insurance would also protect a business against claims arising out of contracts it enters with others, such as the lease of the property and elevator maintenance agreements. A business can also choose to cover employees under the liability insurance. This would give employees coverage for any bodily injury or property damage employees cause during their employment.

Property insurance

- **Definition.** Property insurance protects a business against damage to the building, furnishings, and equipment. Most property insurance uses a deductible system which requires the insured to pay a portion of the loss up to a certain amount-the deductible. The insurance company pays the rest of the loss.
- **Coverage.** There are four types of coverage: basic, broad, special, and difference in condition coverage.
    - **Basic** coverage includes losses caused by events such as fire, lightning, explosions, smoke, vandalism and mischief, and sinkhole collapses.
    - **Broad** coverage includes losses covered in "basic" coverage and also water damage, glass breakage, and damage caused by freezing and falling objects.
    - **Special** coverage includes everything not excluded by the policy. "Special" coverage is the most comprehensive because in the event of loss, the insurance company must find an exclusion in the policy to deny the claim rather than the insured having to find a coverage in the policy which applies.

- **Difference in Condition** coverage usually includes coverage for those occurrences excluded by the other types of coverage, such as earthquakes, tidal waves, and floods.

Workmen's Compensation insurance

- **Definition.** Workmen's Compensation insurance protects a business from injuries to or illnesses of employees arising from the workplace.
- **Coverage.** The CTC must call the state department of labor to find out its obligations regarding this type of insurance. The extent of coverage and its limits vary from state to state.

Documentation

Space

- A floor plan
- An inventory of all furniture and furnishings purchased or otherwise acquired (with date, price or value, and supplier)
- A plan outlining potential expansion capability

Hardware

- An inventory of all purchases and acquisitions, with model numbers, registration numbers, dates, sources, purchase price or value, warranties
- A list of sources for maintenance and repair for each type of equipment

Risk Management

- A risk prevention plan, including staff assignments and responsibilities
- A list of applicable insurance policies, including numbers, agents, emergency phone numbers

Exhibit 6-1: *Checklist of Start-Up Physical Needs*

Space Needs and Utilization			
	rent		heat, ventilation, air-conditioning
	partition walls		installation of closets/secure space
Hardware			
	computers (including monitor, keyboard, and mouse)		
	printers		modems
	server		scanner
	service contracts		additional warranties
Computer Supplies			
	disks		back-up media (e.g., tape, zip disks)
	toner cartridges		
Furniture			
	computer tables		rolling carts
	sign-in table		work tables, desks
	chairs for desks, computers, tables		couch
	lighting for all areas		bulletin boards
	a large wall clock		coat racks
	filing cabinets		anti-static floor covering
	carpet		CTC signs (interior and exterior)
Electrical Considerations			
	expansion of power capacity		telecommunications lines
	installation of electrical outlets		installation of overhead lights
	telephones		telephone installation
	computer cables		computer wires
	extension cords		surge protectors

Office Supplies			
	white and colored printing paper (letter/legal)		white and colored photocopy paper (letter/legal)
	pads of paper		pens/pencils
	crayons		colored markers
	rulers		file folders
	toilet paper		soap/paper towels
	first aid kit		cleaning equipment
Office Equipment			
	copier		fax
	computer		printer
	modem		

Exhibit 6-2: *Sample Rules*

Welcome to Public Access at The Somerville Community Computing Center

When you sign in, you agree to abide by the following:

1. All users must sign in before sitting down to work.

2. If you are able, please contribute $2.00 for the use of the computers, it really does make a difference.

3. No food or drink at or near the computers!

4. If the application you are using has sound, please turn it off or use headphones.

5. Users under the age of 14 are welcome in the center until 7:00, when they are asked to leave.

6. Children under the age of 10 must be accompanied by an adult.

7. Adults and youth have equal access rights to the computers during the times both are present.

8. The Center staff and volunteers reserve the right to ask anyone to leave the Center at any time for any reason.

9. Copying software from any of the computers and/or intentionally deleting or altering the contents of the hard drive will be cause for expulsion.

10. Users of the center are asked to remain in the labs, the hall ways connecting the labs and the restrooms to avoid disturbing other classes.

11. No Rollerblades (or other skates) in the labs.

12. When the volunteers ask you to finish up because it's closing time, please be considerate and do so.

13. If there is a debate over the use of a computer, other work gets priority.

14. The computer labs are only open for public access during posted hours; if you arrive before public access hours begin, please wait in the front hall.