



On the acquisition of Computer for Pathology Departments - Version 1

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Some definitions first

Information is defined as meaningful description of something real or abstract the perception of which is an event able to trigger some action or decision or change the way further information is understood or acted upon.

Information technology is the systematic study of artifacts that can be used to give form or description to facts in order to provide meaning or support for decision making and artifacts that can be used for organization process, communication and application of information

Computer is defined as an electronic instrument which converts raw data into useful information. Though with the newer applications especially communications this definition has become old but still the best definition. It is an application of binary arithmetic which we used to study in schools.

Computational activities of any Pathology Department can be divided into two broad areas:

1. Administrative
2. Academic

ADMINISTRATIVE ACTIVITIES

Every Pathology Department whether small or big has substantial amount of administrative work as volume of data is large. The administrative applications include inventory control attendance, and correspondence. One of the most important applications is Records ie patient reports {Histopathology, Cytology, etc and routine correspondence for which a computer is ideally suited.

ACADEMIC

The academic applications are those which help the Pathologist in his or her professional practice. Softwares are often tailored to meet the requirements of each application. There may be some overlap between the administrative and academic applications.

In a manual system, there is a problem of often duplication of effort in maintaining various registers, charts etc. The strength of a computerized system is in its easy accessibility and deployment for a variety of purposes like research, comparison of old reports without duplication of effort. Additionally, computerized records are easy to find and can be maintained for long periods of time without locking up real estate, and without the risk of damage from water, termites, rain etc. If maintained in CD they can be kept in Duplicate without using the space. A single CD is enough for years.

The academic applications from an institutional point of view, and the individual Pathology teachers perspective

are varied. Thus the application list is:

- Patient reports and records
- Inventory control
- Professional writings and presentations
- Expert Systems and Knowledge bases
- CDs and ebooks in Pathology for teaching students
- MCQ Banks
- Checking answer sheets of students.
- Statistics
- Continuing Medical Education
- E-mail and Internet access
- Entertainment and family use.

Professional writings and presentations: With out debating the merits of the system, it is a fact that the professional credibility of any Pathologist especially those working in medical colleges depends to a large extent on the number of his/her publications. Medical professionals thus keep writing papers, articles, thesis, and even books. The computer is by far the best writing tool ever invented. Revisions, drafts, correction of spelling and typographical errors, aesthetic presentations and speed of working are all real benefits of working on a word processor. Even those who do not have good typing skills, can easily use a word processor.

Seminars and workshops are an integral part of medical science. Without the use of computers, preparation of slides, overhead slides and lecture notes can be a stupendous job. And the end result will still probably be less than satisfactory. Using computers a dazzling array of slides, complete with sound video and animations can be quickly prepared, corrected and modified.

Continuing Medical Education. CME is essential for the

professional expertise and growth of every Pathologists. With limitations of time, long distances and traffic difficulties, it is becoming increasingly difficult to attend Internet access, is a fantastic medium for keeping up with advances in the medical world. **With the advent of teleconferencing we will be attending conferences National and International right at our homes in a not very distant future.** MS Netmeeting is a handy tool for such purposes.

E-mail and Internet access- Communications with colleagues in all parts of the world, multi-centric discussions and studies, access to medical journals, Medline and large volume of medical reference material, is easily cheaply available now through the Internet. Acquiring a computer and modem for this purpose alone, is worth the cost. The Internet is growing at a fantastic pace and is bound to become an integral part of the least our professional working, if not our entire lives.

Research. Anybody who is involved in research knows that a very large part of research work is tedious tabulations, data analysis and painstaking interpretation of experiments. All this can be greatly facilitated using a computer leaving valuable time for the researcher to spend on actual scientific working.. **Internet based conferences can be organized** . www.pathoindia.com ,pathology-images@egroups.com and patho-india@egroups.com are important tools for knowledge management in the world of Indian Pathology

Reporting Softwares: They are commercially available usually using a database management system. If billing is not the need of Pathology department an easy way of making reporting software is to

make a directory in MS-word named Pathology Reports. Make Sub Directories named Histopathology, Cytology and Hematology. In each of these make further sub directories for each organ. While reporting make each report with the file name containing the name and number of the report for easy detection.

MCQ

Banking.-

Various questions can be stored as Multiple Choice questions and can be stored as retrieved accordingly for class tests.

Checking of Questions: MS Excel and MS Access worksheets can be used for checking the answer sheets in a fraction of a second by using an appropriate formula.

Entertainment and family use. Music, videos, games and learning are all parts of the multimedia revolution which computers have undergone in the last few years. There are a large number of encyclopedias, learning programs and now. Many softwares and CDs of Pathology slides and soft tissues are available on computer disk. All these are useful and entertaining.

Which part of my working should I computerize first and at low cost.?

The wide range of computer applications can be confusing and it may become difficult to decide which areas to computers and which areas to leave out. However for Pathologists there are hardly any applications which need much advanced computers except telepathology and now teleconferencing for which dedicated advanced systems are preferable. These days digital cameras

are available which take photographs and make printouts directly without the need of PC as well. which can be attached to a microscope.

You will have to decide which areas to computerize, depending on the nature and size of your departmental setup. As a rule, even if there are no budgetary constraints, do not try to put your entire working in computers in one go. Introduce computers gradually in a phased manner, so that the transition is smooth and hassle free.

The following steps will help you establish which areas to computerize and will help prioritise the sequence.

STEP1: Make a list of all the possible use of a computer in your setup. . You may like to categorise the uses as described above. Do include those areas which are running efficiently even without computers. Theoretically anything which is done repetitively can be given to a software and done more efficiently.

STEP 2: Grade each item on the above list according to priority.

STEP 3: Consider the physical aspects, i.e. location and accessibility of the computer. Should it be in staff room or in some other room where even undergraduate students have access to them..

Only after having completed this exercise and having decided which areas you will computerize and in what time-frame should you start looking for a computer system. A mistake which many Pathologists make is that they purchase a computer first, and then consider what to do with it. This invariably will lead to disappointment and wastage of financial resources of departments.

The correct approach is.

- 1) Identification of requirements
- 2) Identification of appropriate- software
- 3) Procurement of hardware

Pathologists need to use computer like any other specialty. While buying a computer costs are quite often a constraint. It is often said that we should buy the latest and most expensive model. But is it really necessary. Do we need it? We generally buy... What are the considerations while buying one.

STEP 1:- Make a list of all the possible uses of computer in your set up. For Pathologists the possible uses are

1. Office tools
2. Lab Reporting software.
3. E-Books in Pathology.
4. Telepathology software and hardware
5. Internet.
6. E-mail.
7. Inventory control in department.
8. Statistics software for research.
9. Teleconferencing

STEP 2:- Try to find all the repetitive tasks in your environment which may be given to a software.

STEP 3:- Try to find the hardware to fit these tasks. It may include the computer, Printers, Scanner, CD Writer. These days a digital cameras are available for recording gross images as well..

. The main task of Word processing (Typing) E-mail Internet can be done almost as efficiently with an old Pentium I or celeron, rather than latest expensive computers of 1GHz speeds

There are basically three possibilities in the environment.

1. Buy the latest configuration.

PIII 733 Mhz, 128 Mb RAM, 20GB Hard Disk 56X
CD ROM 17 inch Monitor Price about 40,000
Internet Ready Keyboard and Mouse Web Camera and
UPS

On this the applications possible are

Word Processing

Office tools

Reporting Softwares

E-books most

Telepathology

Internet

E-mail

Statistics software

Geographical information systems

Teleconferencing

Server connecting all the Pathology department in the
country or connection with other departments
of the institution. Internet is faster about 30 secs to `1
minute. I mean. all latest multimedia software are possible.
Teleconferencing can be done only if fast connections
with preferably fibreoptic lines are available.

2) Buy intermediate configuration

. Celeron 600 Mhz 64
Mb RAM 20 GB Hard Disk 56x CD ROM 15inch Mon
itor Internet ready Keyboard and Mouse UPS
Price about Rs 25,000

The application possible are

Word Processing ,

MS Office Tools

Pathology related CDs and ebooks

Internet

E-mail

Statistics software

Starting speed is slightly slower by 30 secs. Internet download speed is slower by but most 98% sites download easily. Networking is a bit slow.

3) **Buy older configuration**

Pentium I 166 MHz 32 Mb RAM 52 X CD ROM Key board Mouse CVT !4 inch Monitor Price about 20,000 or cheaper

1. Speed is slower but 90% applications work.
2. Digital cameras show problems esp, because of lesser Random Access memory (R A M)
3. The tasks that are possible are

Reporting software

E-books most but slower.

Internet

E-mail

Statistics software

Word Processing MS Office etc

Almost all tasks are possible with slightly slower but manageable speeds.

A mention may be made of Linux a new operating system which is free and its softwares are freely downloadable from the internet.

The best configuration is the intermediate configuration.

So in conclusion the myth that a computer becomes outdated does not stand. It is only the newer application may not be possible or a slightly slow in case for routine department uses for typing and E books in Pathology even older computer which are not very expensive. So It is recommended that even if there are cost constraints old configurations of computers can serve the Pathology departments very well. Every Pathology

department should have one room where computers are available and CD ROMs of Pathological CDs and Soft wares are available. No doubt computer images cannot replace the real thing they are an additional aid. The Pathologists workstations though entering the scene are still quite expensive and many applications can still be done with older computers.
