3. Give the RFP to a least three suppliers;

4. Have a conference with each to clarify the answers contained in their proposals;

5. Evaluate each proposal on the basis of your criteria;

6. Draw your contract specifications;

7. Select and rank suppliers;

8. Decide on the best method to acquire the system, (purchase, lease etc); and

9. Negotiate the contract.

Contract Specification

As soon as the proposals are received make it clear to the suppliers what sort of contract is required by preparing a contract specification. The purpose of the contract specification is to:

- Place the customer at an advantage;
- Show the intent of the parties; and
- Show what type of contract would be ideal for the customer.

The contract specification can be a draft contract or it can be a collection of important and minor clauses. It should include any matters which the supplier has agreed to in his proposal.

It is important that the first contract be prepared by the purchaser not the supplier, as the person who prepares the first draft has the advantage.

In acquisitions of very large systems you can list all of the desirable clauses, weighting them in order of importance and completing an exposure analysis i.e. listing them as key, significant, minor, unimportant and giving them a risk category rating of anything from 1 to 6 each showing the amount which could be lost as a result of breach in each risk category. This forms the basis for a schedule of clauses to be forwarded by letter to the suppliers.

Part two in the next issue of this newsletter looks at specific agreements for the purchase and maintenance of hardware, and the licensing and development of software.

• *Partner, Westgarth Middletons*

Optical Disk Storage Technology: An Explanation

• *Heather Campbell*

Current Technology – Magnetic Media

Most microcomputers utilize magnetic hard disk drives, often referred to as "Winchester" drives, for the electronic storage of information or data. Information, stored magnetically, is retrieved by means of a read/write head which skims across the surface of the spinning hard disk, locating and retrieving to screen the requested information, data, application or instruction.

These magnetic drives are capable of storing large amounts of information, have extremely fast data access times (generally 18 to 80 milliseconds or less), and are relatively inexpensive.

Some drawbacks to this technology are:

- The medium is not removable;
- Data is subject to accidental loss. For example, a hard disk crash can occur when the read/write heads of the drive collide with the disk. In addition, as information is stored magnetically, placing the drive near magnetic objects can cause loss. Data can also be lost through power surges or spikes; and
- There are some limitations in storage capacity.

Enter Optical Disk

Optical disk has recently become the focus of so much attention because it combines all the advantages of traditional magnetic storage with many other desirable features, most particularly its relative permanence, extremely high capacity storage (up to 1 GB per optical disk) and removability/portability.

Optical disk systems have a number of components:

- Optical Disk Drive (similar to external floppy diskette drives);
- Removable optical disk catridge(s);
- File management software; and
- Small Computer Systems Interface (SCSI).

Information is stored on the optical disk cartridge using a high intensity laser beam which, when shone on a particular spot, changes the properties associated with that spot to the equivalent of a one or zero–binary format. Information is read from the optical disk using a low intensity laser beam which, when shone on a spot, can determine whether it represents a binary one or zero, based on its ability to reflect or absorb light.

Up until recently, the laser beam permanently deformed the optical disk in the process of storing information, making it impossible to erase information. With the recent introduction of erasable optical disk, deletions are now possible as the disk itself is not deformed. Rather, properties associated with a particular spot on the disk are changed and can be re-changed.

There are currently three varieties of optical storage technology:

CD–ROM or Compact Disk Read Only Memory is generally used for large, commercial applications requiring multiple copies of the same information. The data or information must be shipped off–site for encoding on to a master optical disk and many duplicates are created from the original. The user's device, therefore, has only the capacity to read information from the optical disk, not to write any new information to disk.

This type of technology is used for information that is commercial and somewhat static in nature, for example, encyclopaedias, dictionaries and large public access databases. While creation of the master copy is very expensive, duplicate copies become less expensive with volume produced. However, it is really only suitable for commercial information with a potentially wide audience who will purchase the disks and upgrade services.

WORM or Write Once Read Many. While this storage technology allows the user device to both read and write to optical disk, each portion (track, sector) of the disk can be encoded with data only once as the disk is physically deformed during

the encoding process. (e.g. The laser beam burns small holes or "pits" into the surface of the optical disk.) The data itself, however, can be read and accessed may times.Information written to WORM disk cannot be erased or over-written, just re–written to a new portion of the optical disk, making this type of media practical for archival purposes, for example, company records or manuals. However, new versions of information can be added to the disk and the location index amended, removing reference to the previous version and updating the index with the new version. All of this, of course, uses up disk space.

Erasable Compact Disk is the true equivalent of the magnetic hard drive most of us have in our desktop minicomputers. Information stored to this type of technology can be read, altered, retrieved and deleted by the user device.

Commercial products have just recently been released and are therefore fairly leading edge and expensive. For example, one of the first introductions came from Steve Jobs (of Apple computer fame) – the Next microcomputer uses Canon's optical drive as its primary storage device.

How is Information Stored to Optical Disk?

The three methods used to store information to optical disk are: magneto-optic, dye method and phase change.

Each of them changes the surface or properties associated with the optical disk to either reflect or absorb more light – the optical disk equivalent of the binary one or zero (on/off).

Magneto–optic. The magnetic–optic disk is composed of a thin magnetic layer surrounded by either plastic or glass. When writing information to the disk, the laser beam shines a high intensity light on a small area of the disk, heating it to about 300 degrees centigrade. The magnetic property of the heated portion can be easily changed at this high temperature. A magnetic coil then emits a weak magnetic field which causes a change in the polarity of this portion of the disk. The disk cools instantly and cannot be changed unless the entire process is repeated.

When reading information, the laser shines a low intensity light on to the disk. The reflected light waves will rotate in one of two directions (polarization) according to whether the illuminated spot was binary one or zero. The detector interprets the polarization, thus reading the disk.

Dye Method. This storage method uses the laser beam to change the colour of the disk in a particular location, making it more reflective or transparent.

Phase Change. This storage method uses the laser beam to change a small portion of the disk into and out of a crystalline state that will either transmit or reflect more light.

The most common, and the one which appears to be the emerging industry standard, is magneto–optic. The dye and phase change methods are limited in the number of times the medium can be over–written – only 1,000 times, as opposed to magneto-optic, which allows the medium to be over–written as many as one million times.

Reading Information

In each of these cases, when the laser beam shines on the disk to read information, data is interpreted as either

a binary one or zero, according to its ability to reflect or absorb the light of the laser.

Advantages of Using Optical Disk

There are many advantages to the use of optical disk, although at present, it is considered leading edge and more costly than traditional magnetic disks. Some advantages are:

- *Ease of Use* – The optical drive appears as another drive on your minicomputer system or local area network – it requires no special care or feeding.

- *Transportability* – As optical disks are extremely high capacity on physically small technology, transporting entire libraries of information is relatively easy. Rather than leaving sensitive information stored on your office systems, information can be carried or stored off–site or locked in your office vault.

- *Large Storage Capacity* – Vast amounts of current, archival or backup information can be stored on a single optical disk about the size of a magnetic floppy diskette. Some optical disk technologies can support up to a full gigabyte (1,000 megabytes or over 300,000 text pages) on a single disk.

- *Reliability* – Vendors of optical disk claim that it is virtually impossible to destroy data, either by accident or from age of the disk. However, experts note that information stored on optical disk probably does have a shelf life, although no one can really say with certainty what that shelf life is.

Therefore, as with other storage technologies, users of optical disk systems should always maintain backups to protect against physical loss or damage.

- *Durability* – Head crashes, common with magnetic hard drives, are not possible with optical disk systems as a laser beam is used to read and write information.

Some Drawbacks

This is clearly a technology to watch. However, at present there are some obvious drawbacks, including:

- *Lack of Industry Standards* – There are no industry standards for optical disk, making the selection of a system at this point in time extremely difficult – similar to the choice which many of us made several years back between VHS and Beta when selecting VCR Systems.

- *Slow Average Access Time* – The average access time of optical disk systems is currently in the range of 60–128ms – substantially slower than magnetic media. This is currently much too slow for most of our application requirements, with the exception of archived records.

- *Leading Edge* – Although these products are currently in use for a variety of applications, they have not yet been in use long enough to instill confidence in the sceptical buyer.

Summary

Erasable optical disk systems have opened the doors to the storage of huge amounts of information, not only text–based information but also image and graphic information. Traditional magnetic systems could not really handle the storage demands made by large numbers of graphic and image documents. With optical disk, this is no longer an issue.

Its application to the legal community? At the present time its application in the

legal arena is not widespread. Many of the external database suppliers however, are moving to optical technology. Optical disk could be used to store information such as:

- Corporate client records – not only pertinent information but also entire files, signed copies of documents, etc;
- The firm's accounting information, archived over several years. This information could be stored within the firm and would be easily accessible to quickly respond to any query;
- Other practice data, for example, client wills or trust documents;
- Closed firm files;
- Internal firm memoranda or legal databases.

The application of this technology is virtually limitless. It can also serve as a storage device on a local area network, making all this information instantly available to everyone in your firm at the touch of a button.

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KIWINET

• *Anthony Wong*

On 30 April 1990 a demonstration of Kiwinet's legal databases was held at Law Society, Auckland.

Kiwinet is one of the largest respositories of legal information in New Zealand. It is administered by the National Library of New Zealand. For details contact the Kiwinet Manager, National Library of New Zealand 743 089 or freephone 008 736 561.

Details of the databases are listed below.

KIWINET'S LEGAL DATABASES

Indexes to Case Law & General Literature

Briefcase (Case)

Briefcase is created by Law Library Management and is a consolidated index to judgments mentioned in The Capital Letter, Butterworths Current Law, New Zealand Recent Law and Consolidated Case Annotation. It includes catchwords or descriptors, an abstract, statutes discussed, identifies words which have been judicially defined and other cases cited, whether the case has been reported and the necessary details to identify the case.