AN AUSTRALIAN CAVE & KARST DATA BASE

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Technology has proceeded to change the way we think and the way computers work. In the past 10 years computers have become more complex yet much easier to use, and of course they have become much cheaper.

Software developments have not kept pace with hardware developments. Software however has become much more user friendly. Now software may form the main cost of any computer project, where once hardware was the major cost.

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The scope of this paper is to examine how some of these recent changes in software and hardware would affect a cave and karst data base.

Technology has proceeded to change the way we think and the way computers work. In the past ten years, computers have become more complex, yet much easier to use and they have become much cheaper.

Software developments (which are the programmes which enable the machine to perform useful functions) have not kept pace with hardware developments (which is what we can physically touch). Software however, has become much more 'user friendly'. Now software may form the main cost of any computer project, where once hardware was the major cost.

Recent developments in software are aimed at reducing the cost of this software component of any project by reducing the human component.

The scope of this paper is to examine how some of these recent changes in software and hardware, would effect a cave and karst database.

INFORMATION IS POWER

The brain is adequate for storing certain information and has been used for a long time, but limitations such as intentional and unintentional errors are quite common. No storage device can equal the brain for versatility, but physical storage on knotted ropes, ledgers and magnetic media is more permanent and more easily accessable by other people and if done correctly is usually less error prone.

Electronic computers have helped people to cope and produce the masses of information used in our complex society.

The hardware is now cheap and reliable. It provides storage devices with millisecond access time (often microseconds and even nanoseconds) with enormous storage capacity, megabytes and even gigabytes. (a byte is one character usually represented by eight bits). These devices can be bought at low cost, for example a disk drive with 5 million characters (or about 2,500 A4 typed pages) is available for around $3,000.00. The storage capacity will increase and the cost will reduce in the future.

Storage was once very expensive. Volatile memory (memory which disappears if the power supply ceases) was, ten years ago, about $1,000.00 per one thousand characters. Now, for example, 16 thousand characters can cost about $100.00. This is 160 times improvement in cost performance.

If the car industry could have performed at a similar level, it would cost $2.00 for a Rolls-Royce and 200 would fit on the head of a pin.

The hardware has changed in a remarkable way. The software has improved but not at a rate comparable to the hardware. However, the rate of improvement has increased in the last two to three years in particular.

Until recent times, new and updated information was collected in batches. Then at regular intervals this information was transferred from temporary records to the master storage. The main problem with this approach is that between batches, the information is out of date and at least two copies of records are kept.

Interactive processing is the most common way of doing data entry today. The data is entered directly on to the computer. The master record is now the actual correct data. The computer also has the advantage that it can check the data for errors before storing it. If the data is invalid, the computer then can give the person entering the data a chance to correct it.

The master record group which enables people to have direct access instead of multiple working copies and intermediate forms of the information, is called a database.

A database is a collection of related records on one or more mass storage device(s). All the records and sets are described by a specific scheme.

A record is a collection of data items treated as a unit, such as particular information on one aspect of a cave, such as length, depth, etc...

A set is a defined relationship among the records in a database, for example, all the caves over 50 metres long.

The schema is the structure and logical description of a database. It is this structure which enables the addition of new categories of information without restructuring as would have to happen even with conventional computer files.

The procedure would be to define the new category and its relationship to other databases by adding these new definitions to the schema of the database.

What does all this technological mumbo jumbo have to do with caving and A.S.F.?

A major reason is that a database is the only effective way of handling the mass of data available on Australian caves. With the use of modern computer typesetting for publication, it provides an economical way of producing up-to-date publications with regular updates available.

The database could also be used for scientific research or for a rapid response to conservation issues.

For example, if a database was available, information about certain Tasmanian caves may be more readily available and even a type set quality publication could be rapidly available.

Examples of types of questions would be:

- List 50 deepest and longest caves in Australia, by State.
- List all caves owned by Government, noted as having archeological significance in Western Australia and Northern Territory.
- List all known maps, map controllers and map publication references to caves in the Kimberleys.

These type of questions may help caving in Australia undergo a renaissance, as people can easily see what work has been done and more importantly what still needs to be done.

In conclusion the database project is underway and hopefully soon will produce results, but on its own, it's nothing. What will be important, is how it will be used and how its publications are treated.

They should be questioned and data which is out of date corrected and updates regularly made available. A properly constructed database may cause a new age of activity in caving in Australia.

DISCUSSION

The proposal is to have the database on-line. The data can be safeguarded by cave, State or cave-property by the use of access codes. Individuals with home computers will be able to update and interrogate the database for the cost of a local call in the major cities.