Computerised Maintenance Management System (CMMS)

Mr Kim Bruton who has over 20 years' experience and knowledge in facility management and maintenance, writes about the pros of Computerised Maintenance Management Systems.

A Computerised Maintenance Management System (CMMS) is an essential management tool for managing asset preservation.

Today, asset preservation is of primary concern to all organisations and they should take seriously their strategic planning and asset life cycle costing.

An effective CMMS should be able to support this area by gathering relevant information in order to perform this process.

Information on historic planning, historic ad/hoc and breakdown costs, and recurrent costs, should be gathered. A CMMS also needs to be able to set in place the strategic plan for replacement and upgrade of major assets. Planning assists budgeting into the future and historical data supports this planning.

If your organisation has a CMMS, what are the benefits that you are receiving? Is the CMMS producing the information you require? If you do not have a CMMS, should you be considering one, and why? These are the questions many of you will be asking.

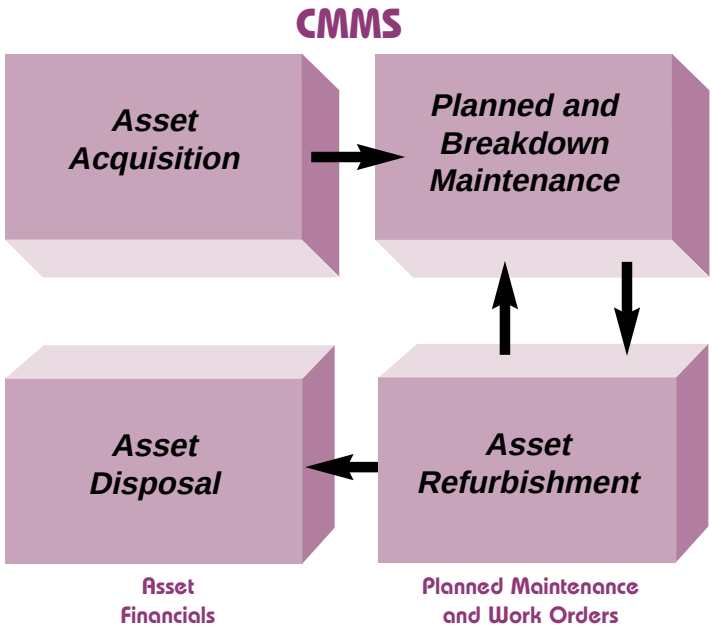

Diagram 1[1] The Life Cycle of an Asset and its inclusion in a CMMS

[1]The life cycle of an asset in 'Planned maintenance of assets within the public sector', by Jeff powys and Angelo Franco, Maintenance Journal, 1996.

What is a CMMS?

The primary purpose of a CMMS is to capture the maintenance history of an organisation. In real terms most CMMSs perform the basic function of raising work orders to cover repairs and maintenance of buildings, plant and equipment. They provide a scheduling facility for maintenance for planned preventive works against maintainable assets. And also they generally collect costing details for the labour and materials related to the work performed.

General Considerations in Justifying the Need for a CMMS Solution

Considering a CMMS?

The first consideration in choosing a CMMS is whether to keep maintenance information in a database on a computer? Some people will say that it depends on the size of the

organisation and its assets. Others will say that it depends on the number and quality of staff available to resource the CMMS. Also there are those who would argue, as I have in the past, that it can all be done on paper.

I am sure that in the past many of you who were required to prepare reports for your manager, spent hours of time sorting through maintenance requests and the plant maintenance card system to find the answer(s). Or worse just gave an educated guess.

The in-house trades staff, contractors, maintenance engineers or the facility manager could gather this information. The information then would need to be stored for historical reporting purposes. Historical information as we know, takes time to develop into a valuable resource. Only a well designed and implemented CMMS can index and sort through years of information related to the maintenance, cleaning and strategic planning of buildings, plant and equipment. In reality, regardless of the size of an organisation, you need to maintain a database of the work performed.

Who is doing the maintenance?

Another consideration is what is being maintained and who is doing the maintenance? It could be that the entire maintenance plan is one of breakdown maintenance, where people call someone as and when needed. Some would question the need for a database as all the maintenance is performed by contractors with their own database, which they then use to report back the work which has been performed. Therefore, many would question why you need to duplicate this.

Over the past 10 years, at the least, maintenance of buildings, plant and equipment has been, in many ways, curtailed due to the perception that maintenance budgets are too high for no apparent return.

We have been very fortunate in Australia and New Zealand that the maintenance of most facilities has been historically of a very high standard at the onset of this constant cutting of maintenance budgets. The trend as we are all aware is for the majority, if not all maintenance, to be outsourced to contractors . This is acceptable in most instances as long as there is a core of in-house technical staff to manage these contracts. In my opinion, the management of assets by non-technical staff adds to the cost of maintenance through misunderstanding. Many of these assets are now recognised as requiring additional funding to either refurbish or replace them.

If you have a chance, look up the many different types of maintenance that are defined in the Glossary of Building Terms. It is necessary to have a balanced maintenance program in place for the continued management of assets, primarily consisting of:

- Breakdown maintenance. It is unfortunate that there will always be a breakdown component in any maintenance plan. The best that can happen is to reduce it as much as you can by implementing preventive maintenance programs.
- Planned preventive maintenance programs that call on scheduled testing and overhaul of buildings, plant and equipment.
- Condition-based maintenance programs that invoke an action based on the condition of the building, plant or equipment after a scheduled inspection.
- Capital improvement of the building, plant and equipment. This may not be viewed as a maintenance function however, the future upgrade or replacement of assets has a direct affect on the type and frequency of maintenance that is performed.

In my opinion the management of these programs, in particular reporting their current status and future needs, requires a CMMS. Managing the operation of on-site maintenance contractors is a daunting and difficult task, however, if there is a corresponding record within the CMMS then this tracking and management is much easier.

Even if you are duplicating data to what is in your contractor's CMMS (the contractor's CMMS may not be on your premises), it is extremely important that you have your own copy of data. Your contractor may cease to exist and for the sake of future reference and reporting it is essential you have your own CMMS populated with your own data.

What information should be captured?

Further consideration should be given to what information do we WANT to keep and more importantly, what HAS to be kept? There are many statutory requirements that impact on this question such as fire, health and safety legislation. Pressure vessels, lifts/escalators and building maintenance units come under work cover legislation. In particular, in the health industry, a significant amount of legislation exists to dictate many other maintenance functions. Also to be considered is the maintenance which deals with the aesthetics of a building such as, painting, cleaning, space conditioning and building upgrades.

In Australia and New Zealand information storage requirements for work carried out under the work cover and other statutory legislation is to be paper based. These include service reports relating to fire, health and safety.

The rational for this is for the purpose of inquiry by the relevant statutory authority in the event of an accident. These statutory requirements (programs) could be entered into a CMMS as a scheduled maintenance plan with labour, materials and costs for projecting estimated future costs. By keeping a corresponding job record in the CMMS and using the job number as a cross reference to the paper record, the organisation is able to quickly report on the status of the statutory work in preparation to the annual signoff. Those of you who have had work place safety audits are aware that the first question asked is 'Where are the maintenance records?' A maintenance plan that includes

estimated costs can be compared with the actual costs to ensure the effectiveness in the cost of asset preservation.

Currently hospitals, public, commercial and certain residential facilities require a fairly comprehensive statutory maintenance regime. There are a myriad of inspections and testing regimes required. Fire, health and safety legislation alone is extensive, in Australia under the Essential Services provision of the Building Code of Australia and in New Zealand under the Building Warrant of Fitness. These regimes could require up to 44 elements making up the fire, health and safety legislation to be performed on each building in the facility. Add to this the requirements for boilers, lifts/escalators, receivers, sterilisers, air-conditioning, fume cupboards, plumbing and electrical, and there is a great deal of compliance management to be undertaken.

Information transfer with other software?

Finally we need to consider whether the CMMS needs to interact with other software such as the corporate finance package, the building management system or the fax/paging systems. Will the CMMS carry the asset register for the organisation? Will the information stored be required to support information from other databases for reporting purposes? Who in the organisation and at what levels will require access?

All CMMS systems will gather information. The quality and amount of information gathered will depend on the commitment and resources available to manage it.

As mentioned earlier, it takes time to turn information gathered into a valuable historical resource. In many cases the information that is gathered is duplicated in other systems throughout the organisation, for example accounting packages, strategic planning and space management tools. It is important for the CMMS not to be stand-alone. The CMMS has information that is current and beneficial. However, value can be added by using and including information from other software systems or data capture systems.

The CMMS should interface with other software to allow an information transfer, it is better for this to occur online (periodically) or in real time. An isolated database although useful, can be out of sync with other reporting databases, in particular strategic planning and costing systems.

To further explain this point, here are a few considerations to look at when evaluating interfacing capabilities:

- Is there an ability to collect requests for work to be done directly into the CMMS via electronic means? This can be either LAN/WAN or Web based. This is important as it provides a snapshot of the current work, saves time and money by eliminating the need for a phone call and data entry, and can provide direct feedback to the requestor regarding the status of the job request. It could be said that e-mail can provide a similar solution however, there should be a transfer of information between the systems, to make this effective, and eliminate double entry.
- Is there an ability to interface with the facilities Building Management/Building Automation System (BMS or BAS). This interface can provide an automated condition-based preventive maintenance plan, where work requests are automatically produced in the CMMS. This ability can be very efficient and cost effective.
- Is there the ability to dispatch work directly to in-house trades or contractors? Can work be directly faxed, printed or paged to the required staff? Or can it be transferred via electronic means? Can contractors review their workload, download work orders and complete them via the Web? The use of current technology including personal data entry (PDE) devices or the Web is essential to reduce the amount of time to manage the CMMS database.
- Does the CMMS interface with the corporate accounting/finance system and asset register software? Transfer of information between these packages adds value to the collection, management and replacement planning for assets.

Selection Process

So where do you start looking for the right CMMS package for your organisation?

- Look within your own organisation and determine what is happening with the maintenance function. Check if there is an existing maintenance program in place, check its functions and who manages the information gathering process.
- Determine what maintenance is required to be performed on the building, plant and equipment that make up your facility.
- Prepare some sort of brief as to the facility's minimum and optimum requirements for a CMMS, the resources to manage the database and time frame for implementation.
- Advertise for 'expression of interest' to providers who can meet the requirements of your brief. The reply should provide the normal marketing literature, a demonstration disk, referees and some indicative pricing.
- Review the information and software provided. Ring the referees and check that their operation is similar to your requirements and therefore the software would handle your needs.
- From the initial evaluation select between 3 and 5 providers. Have them present their product to assess the package in terms of ease of use, functionality and ability to meet your requirements.

This is a simplistic approach to the selection process, however, it will give most managers a good starting guide to the selection of a CMMS.

Obtaining the benefits of a CMMS

In my view there are other factors to consider beyond the basic CMMS functions. This has to do with many of the issues related to effective and efficient

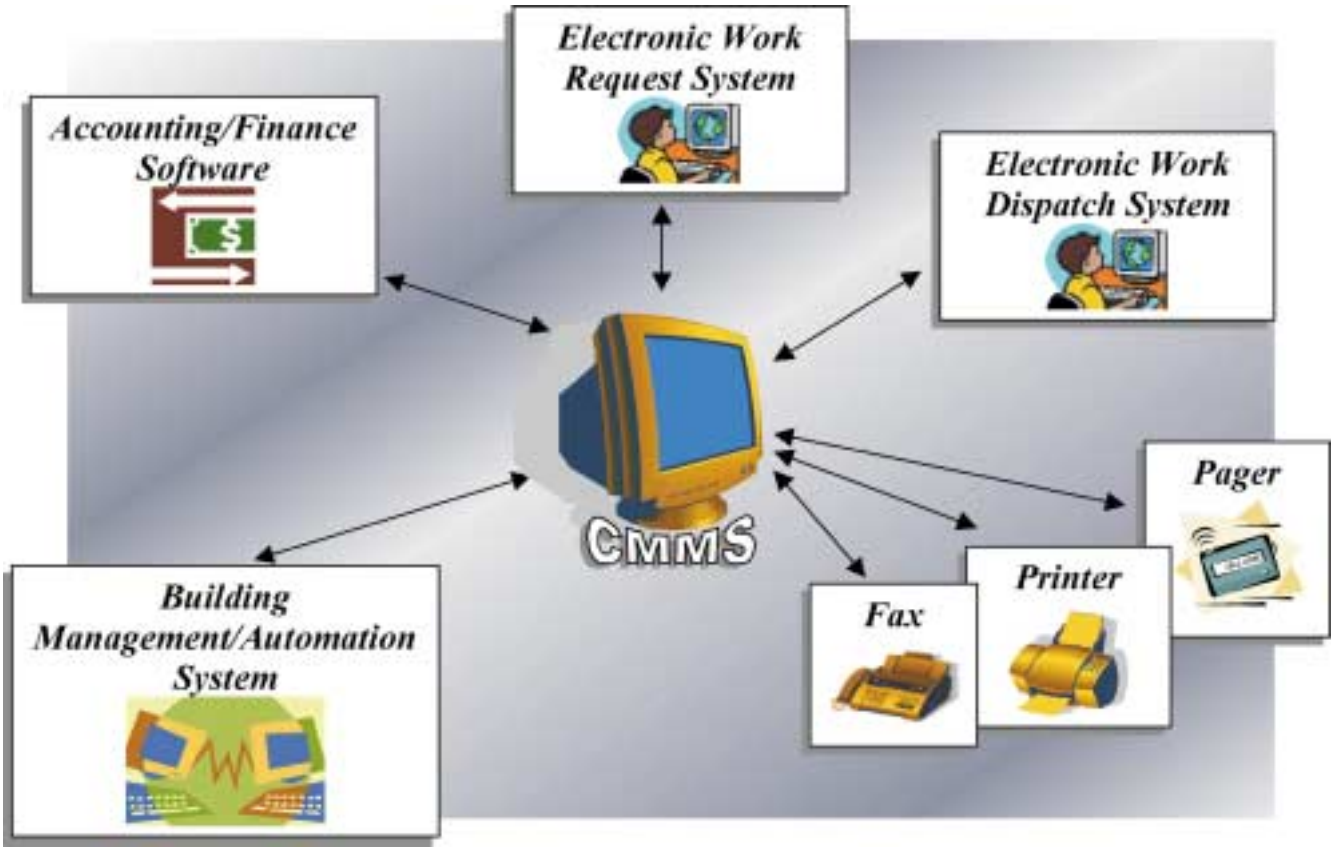

Diagram 2 Software Interfacing

operation of historical databases. As mentioned earlier, history takes time to collect and mature into useful information. This information can be analysed to guide and compare against future requirements in areas such as strategic planning, life cycle costing, budgets and resourcing. It is at this point that the benefits of a CMMS are realised and obtained.

Many providers of CMMSs sell the cost benefits of managing maintenance information and unless you can reach this point, there are no benefits. You must have reliable information that has been collected over a long period of time to ensure informed decisions are made on the future of maintenance, upgrade or replacement of assets.

One of the most important issues is the quality of the implementation process of the CMMS. It is this that has the greatest effect on the efficient collection, maintenance and reporting from a historical database. It pays large returns on your investment to ensure that consultants with a good technical/software background conduct the implementation process.

In my role I am continually asked, is there any way to reduce the time that staff have to spend sitting at a PC managing the information? There is an old saying that has been around for as long as I have understood and used computers, that is 'garbage in, garbage out'. Therefore you must invest the time and be committed to your CMMS in order for the whole process to be effective.

We all must remember that business is always changing. In this context you must review your CMMS structure every 3 to 5 years, in order to make sure it still reflects the changed business practices and strategic planning of the organisation. The best thing to do, is to choose a CMMS package that is scalable, innovative and constantly being enhanced with the changing needs of the industry.

As mentioned at the start of this document, in today's day and age, asset preservation is of primary concern to all organisations and the strategic planning and life cycle costing of assets should be taken seriously. A CMMS can significantly assist the process of asset preservation and as demonstrated throughout this document, it is an essential part of an organisation's maintenance.

Have a look at your current procedures. Are they effective? Do they give you what you need? Do you need to look for a CMMS solution?

ABOUT THE AUTHOR

Mr. Kim Bruton has over 20 years of experience in Maintenance Engineering and has held various positions including the Chief Engineer at several hospitals and Investigating Officer at the NSW Building Services Corporation. Kim currently heads up the CMMS Consulting Team at Mercury Computer Systems, where he holds the position of Professional Services Manager.

Kim has implemented a CMMS system (BEIMS) at many sites, conducted training courses and has consulted to many organizations on re-engineering their existing maintenance operations.