The 6 Secrets of Making a Computerised Maintenance Management System Work

MEX
Maintenance Software
MEX MAKES IT SIMPLE
www.mex.com.au

Author's Note

Some people may find my viewpoint in this book interesting, as I own a company that creates and sells a Computerised Maintenance Management System (CMMS), MEX. Therefore, I should be pro my product throughout this book. Well, I am and I am not. I believe that my company has made an excellent CMMS and I am proud of our achievements. I am also very aware that companies need to buy the system that suits their own needs.

As I have often said, I would rather tell a customer not to buy our software, if it does not suit their needs, because I do not want to have unhappy customers.

So, please enjoy reading this book and I hope it provides you with knowledge and ideas to make your CMMS a success.

Steve Ninnes
MEX General Manager

Table of Contents

The 6 Secrets of Making a Computerised Maintenance Management System Work

Introduction

From years of experience in creating, installing and managing Computerised Maintenance Management Systems (CMMS), Maintenance Experts has learned a few things about the do's and don'ts of these systems.

This E-Book has been compiled for people who are looking for a CMMS, and also the those that may already have one, but want it to perform better than what it does right now.

The 6 steps that are listed in this book are in logical order. They have been compiled as the main reasons for how I have seen CMMS's fail over my career; whether our product or other companies that I have worked or consulted to.

The 6 steps are nothing extraordinary. They are, in fact, all very ordinary. However, they are the things that are often forgotten in the rush of getting a CMMS up.

I believe, if followed, will mean a greatly improved implementation and success of a CMMS.

Step 1 - What Is The Outcome

The first step in the process is determining what this CMMS will do for you. From determining what it will do through to the outcomes you expect out of it.

When you are about to buy one of these systems, ask yourself why you are buying it? What do you want to get out of it?

This may sound a bit silly, but, from experience, I can say that it is the most poignant step in the process.

The most direct answer to this question, Is that you want a CMMS to make your life easier. However, this is the one thing that all people have been trying to achieve ever since computers were created. Being able to buy a computerised system that will allow me to go home early every day and make my job just work so smoothly and easily with all the right results when needed.

Something similar to saying, *"Computer, please tell me what equipment I should replace and when."* Then lying back in your chair, with your chai Latte and having a well deserved break. Three minutes later the answer comes back, but quietly though, so it does not disturb you from the refreshing break you are having, and presents to you a concise list of what to do. This normally would have required a team of Harvard scientists a month to achieve. However, the CMMS you have chosen, does it for you.

Wow, who wouldn't want one of these?

Sadly, to this day, the chai latte is sitting lonely and cold by itself on your desk amongst reams of papers and reports whilst you are out putting out another bush fire on the shop floor.

Back to the real world now. What do we want this system to achieve for us?

For example,

- Reduce engineering costs
- Improve availability of plant
- Reduce breakdowns
- Efficiency in general
- Improved safety
- Higher level of customer service
- To keep a record of what we do
- And many more…

This is a fairly concise and complete list of the normal reasons as to why a CMMS is purchased.

Please notice that these are high-level aims. We are not talking about nitty gritty. IE Must be able to record account codes against work orders. Or must be able to issue spare parts directly from a work order.

As normally, these sorts of outcomes do not appear here, but rather in the functionality list for the CMMS. However, this does not exclude them. As it may be deemed that one of these reasons is the main reason why the current CMMS must be replaced.

This is important because as I go through the next 6 steps, it becomes obvious that this is needed right at the start for having a successful system.

As an example of this, if you want to reduce costs then at a later step you want the CMMS to easily capture labor hours worked, parts used, contractor's costs etc. What if the CMMS cannot do this? Because there are a plethora of systems to choose from, and not all of them will record labor hours. So, if costing was an important issue for you, then decide it up front and the rest becomes so much easier.

Keeping Everyone Happy

It is normally not just one person deciding on a CMMS as it affects maintenance, engineering, warehousing, Purchasing etc... So many people will be needed to decide on the system to fit in with each manager's and departments needs.

This always makes the decision making process harder. The list of desired outcomes of the system will be larger than if only one person decides.

And the complexity also grows from this point, as the functionality list may be extremely long for the software required.

I have been involved in many decision-making processes with large selection committees involved. And invariably this take a long time as everyone wants to be satisfied with the choice made.

Quantify It

This is not that large a requirement. However, is it possible to determine the amount that you are looking at getting out of the CMMS.

For example, reduce costs by 10%, increase availability of the truck fleet from 50% to 72%. All Customer requests attended to within 2 hours.

Then a gauge is set to see what performance is achieved trough the use of a CMMS.

Step 2 – Choose The Right System

The next step in a successful CMMS is choosing the right system. Now this may seem a bit wrong having a company that exists because of its CMMS should say this. But I am the first to admit I have told customers in the past to not buy us and to buy another system instead, because it suits their needs more effectively. My philosophy is that I would rather have the customer buy the system that fits their needs than be unhappy with our system forever.

Firstly, in choosing the right system there is a requirement to work out what you want the system to do. This is termed its Functionality - the listing of all the things that are needed.

Secondly, after having determined the functionality it is necessary to look at the usability of the CMMS. This is a rating of how easy it is to do what the CMMS needs to do.

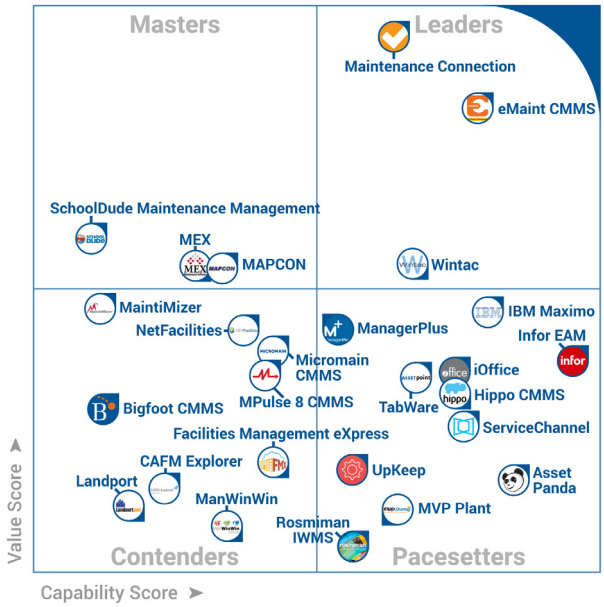
This can be broken down from a hierarchy point of view, for example,

- A Work Order system is required
- You must be able to segment the work by component type. E.g. Breakdown the asset being work done into its components.
- The ability to approve or decline Job requests
- The ability to have user level security so some people can only see parts of the system.
- The ability to invoice customers for work done.
- A Job request system is required

The higher level can be analysed further more:

- The Job request must be on-line over the internet
- The Job request must allow for an estimated price to be entered.
- Must be able to approve and cancel Job requests.

Depending on your requirements, this can require a large amount of input and time. Then for each of these the functionality needs to be rated as to how important it is.



Source: Software Advice

The Most Basic Things

The most basic things that you need your CMMS to do must be asked.

This may seem strange because you may think that these systems are all very similar, but they are not. Each computer system has its own features and functions. For example, if you were to need invoices created from work orders then you would wipe out 90% of your choices, as only a few of these systems do this. If you wanted an Online Job request system, then only about 75% would comply.

As part of the Feature listing it is advisable to place a rating on how important each feature is, as some are more important to an operation than others.

For example, must have a work order system. This is a high rating. However, would like a field to record % of job completed is a nice to have.

Any of these can have an importance index on them. Say a scale form 1 to 5. 5 is a must have and if it cannot do this then it is not acceptable. Through to 1, which is oh wouldn't it be great if it also did this.

This can be tabulated:

Feature	*Importance*	*Result*
Work Orders		
Create edit and delete work orders	5	
Add priority to a work order	4	
Be able to segment work by department	4	
Customise work order printout	3	
Be able to change the name of the work order	2	
Purchase Requisition		
Enter where to have goods delivered	1	
Be an on-line system for all personnel to use	5	

The result here can either be a yes no answer or a rating of 1 to 5, depending on how it is approached.

Will You Do It

If you do not have the time to go through this process, then it is suggested to invite suppliers to display and demonstrate their system and then ask them to show how the system can fit in for you.

Maintenance Experts does this and I am certain that the majority of the suppliers of CMMS's out there are prepared and have the appropriate skills to perform this task.

Usability

Frankly, this is the most important part of Step 2. Yes, you have functional needs, but if you choose a system that has all the functionality you need but is impossible to use then the system is dead before you even start.

Usability is a rating of how easy it is to do the function stipulated and it is very important. If something is too hard for people to do then they will not do it. No matter how hard and long you train people; if it is hard to do they will find a way around it.

In judging the usability of a function it is also dependent on the frequency of what that function is performed.

If a particular function is performed 500 times a day, then it should be as easy and as straight forward as possible to do.

If the function only occurs once a month and one person does it, then usability can be sacrificed. As an example of this, some functions which occur numerous times each day are:

- Raise a work order
- Create a job request
- Print a work order
- Print a purchase order
- Receive goods on a Purchase order
- Issue parts from the store
- Issue parts form a work order.

These tasks should be easy to do requiring very few keystrokes to achieve the end result.

How It Can Go Wrong

I personally was involved in a project 20 years ago, where one of the main reasons why a particular CMMS was chosen was because it allowed for all users to issue spare parts directly from the work order.

By allowing this to occur this reduced the number of incorrect issues from the store and costing was much more accurate.

The system did this well. However, there were 12 steps required to go from the selection of a part through to its issue. The end result was a failure.

Extensive training was done. However, it was hard to remember how to do the issue and it took too long.

The end result is that people did not do it, and the store requisition books were re introduced with one person doing all data entry after the fact.

So, even though this system was incredibly functional, is was not usable for the job that is was meant to perform.

In judging this, the Computerized Maintenance Management System needs to be rated on both of these items: Functionality and usability. One without the other will not cut it.

Judging Usability

This is a simple process.

Two values are required:

- A frequency field and a usability field. Frequency is how often the task will be done in a month.
- Usability is how difficult it is to perform the task.

Feature	***Importance***	***Frequency***	***Usability***	***Result***
Work Orders				
Create edit and delete work orders	5	1,000	2	2,000
Add priority to a work order	4	1,000	5	5,000
Be able to segment work by department	4	-	-	-
Customise work order printout	3	1	2	2
Be able to change the name of the work order	2	0	2	0
Purchase Requisition				
Enter where to have goods delivered	1	500	3	
Be an on-line system for all personnel to use	5			

The result here can either be a yes no answer or a rating of 1 to 5. Depending on how it is approached.

The higher the frequency the more important the usability is.

All High Frequency tasks must be easy to do. Otherwise, the system will be harder for full acceptance by the users.

Making The Simple Hard

At MEX we have always been amazed at how so many companies can take the simple and make it into the impossible.

The one that always makes me laugh is that to raise a work order in MEX can occur in less than 1 minute. To do so in one particular system that I know of is at least 5 minutes. The training required to learn how to use these work orders is a week long training course. For MEX the training course is one or 2 hours.

Apple vs Microsoft

As another example of this, there has been an ongoing war between Microsoft and Apple for the last couple of decades. When it comes to graphic design both of these systems are very capable in the functionality stakes.

In my opinion when it comes to usability the Apple wins hands down in graphic design. It is just so much easier to use than the Windows based system. As a testament of this Graphic designers prefer Mac, as it is easier to use.

Are In-House Systems Better?

Are in house systems better? Yes, they are. But here are the pro and cons of an in house system:

Pro's

- The system will better suit your needs, functionally and usability.
- Can be cheaper
- Changes can happen quicker
- Not reliant on third party

Con's

- Can cost a lot of money
- Time of delivery
- Maintenance cost on going. As business changes so does system
- Internal support only
- If a person leaves can be in trouble with longevity of system
- Rarely updated as done once and keep forever.

As you can see the main reason to make your own system is for it being able to do the job that you need it to do. However, there are many down sides. The choice is there for you to make.

References

Never believe a salesman or a company selling something. Talk to customers.

Speak to the customers who already have the CMMS. Just see what their service is like, does it do what they wanted it to do? What problem did they have, how did the supplier help them out? The customer will tell you exactly how it is.

Documentation

Another good way to view the robustness of the product that you are looking at is asking about their documentation. That is are their user guides, training course notes, training software up to date and of good quality.

You must ensure that the CMMS provider has these available. As without it, your hands are tied and extra costs can creep in. For example, if there is no user guide, you eventually will end up having to write your own. As, even though at the time you may not think it is necessary, at some point in the future it will happen.

So, make sure the system is documented well. Maybe even sight the documentation to rate the quality of it.

As a rule of thumb for documentation, it appears that the more money you spend on a system the less chance there is of having good documentation. It is an inverse relationship. The more you pay for the software, the less chance of having good documentation.

Step 3 – Implementation

With any management system there has to be an implementation process. It is not like an X-box console, where you put the CD in and viola, 2 minutes later you are playing a game.

A CMMS needs some data to start with. Without it, you cannot manage effectively.

For example, all of the following codes may need to be built and entered into your CMMS before you start.

- Asset Register
- Account codes
- Asset types,
- Manufacturers
- Model no's
- Contact details
- Job types,
- Departments
- Work Order Priority
- Statuses
- Tax codes
- And more...

Some of these are very time consuming, whilst others are fairly simple and easy to create.

In many cases, as in the case of MEX, many of the codes are preset in the system. So, the average user can get up and running with their system quickly and easily.

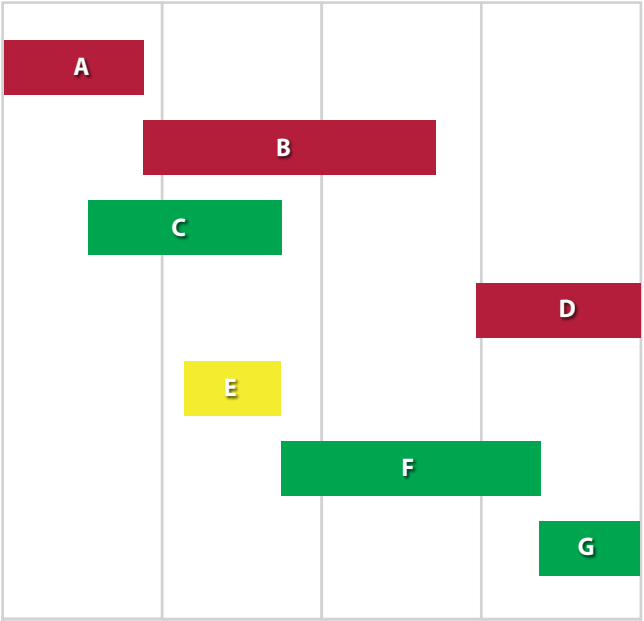
However, the point to be made in step 3 of the 6 secrets is that a plan is required.

This is because the process will take time. If it is only going to take few hours then a plan is still needed, however, it may be very small and flimsy.

But, if the implementation is going to require a period of time to gather data and then have it input into the CMMS then a plan of how, what, when and why is required.

For example, the following is an excerpt from an implementation program in Gantt chart format.

As an example of the tasks to be done:



(A) Gather asset information of all major assets
(B) Determine component structure of assets
(C) Determine numbering system
(D) Number all assets
(E) Determine asset types
(F) Determine extent of data coding for assets
(G) Enter assets into MEX

1. How will assets be numbered?
2. How will the catalogue be numbered? Please note there is a very useful tool available from a company called Oniqua to assist you in cataloging. This is a standard based upon the NATO Cataloging standard.
3. To what level are you going to go to with the numbering.

All of these steps should be thought out as they will take time.

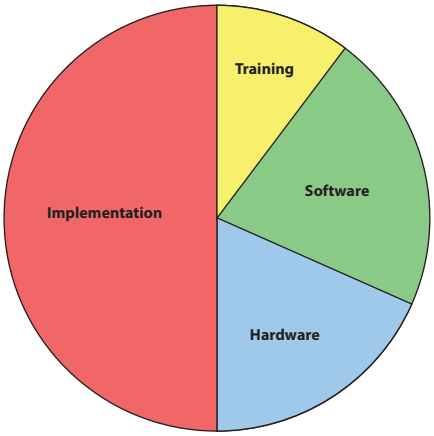
Standards

These are essential for good quality data. Without a standard for how to number assets, for example, then the resulting set of assets into the CMMS will appear inconsistent and hard for staff to follow.

The Cost

One of the major costs in the purchase of any CMMS is the implementation. This will normally cost as much as the software alone, in your time, which is a hidden cost or in getting in contractors to do it for you.

Overall cost of a CMMS to a usable stage



The majority of the cost is in getting the CMMS to work

As an example, if you have to create an asset register, then there are days, let alone weeks, worth of work in getting this data recorded.

Upgrading From Existing Software

If you have an old system and are looking at swapping it from one to another then this will be much easier as the data is already available to re use in a new package.

The data should be able to be easily transferred from one system to another and the supplier of the CMMS should be able to do this for you.

Why It Takes So Long To Implement?

Yes, there is a phase of data acquisition where someone or many need to go around and record information.

However, and this is dependent on the size of your organization, there is the decision making stage. I can comment from first hand experience that this period can be incredibly lengthy. The simple reason is that someone needs to make a decision.

For example, if there are 3 sites, each of them having been in operation for a number of years.

Each site has developed their own priority system.

One site has a numbering system from 1 through to 20. The next one has a simple system of low, medium and high, and the third site has a numbering system from 1 to 6.

For the new Computerised Maintenance Management system to come into use a decision needs to be made on what priority numbering system is going to be used.

As you may imagine these can become political contests. And then become long and drawn out because a decision is not made. To actually enter the priority system into the CMMS will only take about 10 minutes. But may take 10 months to make a decision.

Regionalised Systems

Is this necessary to only have one system?

No it is not. It is possible for some of the CMMS's on the market to allow for disparate sets of data to be used by each part of the operation. This is called Regionalising a system. Coming from when global companies use one system based in one country but used by many different nations and languages.

As an example, MEX can be regionalised. Allowing the users of one part of the operation to only see the relevant data for their area. This is the same with all the other parts of the operation.

The down side to this though, is that managing from a central point can be difficult. As each site will have its own set of data that may not match up with the other sites. For example, if you want to compare the costs of PM work between these 3 sites, then if each site uses a different term for PM then it becomes difficult to be able to report on this, and hence manage it more effectively.

The rule of thumb is that all sites will use the same set of data. It may even need to be translated into multiple languages to allow or conformity so that all can use the same base data.

For example, a work order status of closed may be needed to be entered as *"closed / cerrado / geschlossen."* The translation of the word closed in Spanish and in German.

We have many customers in China, and all the underlying codes are stored as English and Chinese.

NB: *if you only have one site, this can still be a problem if you have multiple departments that each have do it there own way.*

Cataloging

If you need to catalogue your inventory then expect that it will take time. The rule of thumb is that if you have an un-catalogued store. That is lots of stuff but not positive as to what it is, then it is possible to record about 10 items an hour. If you want full cataloging then this will reduce down to about 3 items per hour. There are experts out there, called Catalogers, who can do this for you.

The stores inventory catalogue is possibly the most time consuming of any of these tasks.

For some systems it must also be noted that they will grow as you grow. This means that some CMMS's on the market will allow you to add information on the fly as you go. MEX, is a good example of this. Where if you have to enter a new asset, catalogue item, supplier, manufacturer during your daily work practice then MEX will allow you to do this easily and quickly.

Any CMMS that has this feature will greatly reduce the problem of implementing your system.

Timing

How long will it take? This is dependent on many factors. It can be said from experience that it will take anywhere from 4 hours to 2 years. We have a case record at MEX where a City Council heavy plant section was set up in 4 hours. By the time that the 4 hours was up MEX was producing work orders from its PM program.

What is needed is a plan for how it will be implemented.

Step 4 – Training

This is another step that must not be taken lightly.

With no training comes frustration and the open challenge to failure of the system.

The training will never stop, and it does not matter how good the system is you will need to train people.

Some systems are better than others though. There are some systems, which it seems no matter how much training is done, people always struggle in the use of the system.

As a statistic, only 25 % of all MEX users have ever been trained, which I think is actually a good result.

As, a survey has been done and found that the majority of every day users of our products only need a 30 minute training session to do what they need to do, and that is it.

Training does not require a formalized on going training system. Rather it is dependent on what each user has to do. Again the usability of the product will determine this.

Step 5 – Develop The Rules

What rules apply? Okay, this can be a very tricky one, and what the hell am I talking about anyway.

Lets keep it simple. I will explain this through an example.

When do you raise a work order?

A simple question, fraught with many different interpretations and answers.

The answer to this question can vary from *"for every job that is done"* through to *"only those that are important".*

Because, and let this be made very clear, it is very hard to record work orders on every job done. To record a work order for every job that is done may not be practical and will end up costing you money.

For example, if you are in a work shop and a staff member brings in a car because the radio does not work and you hop in and fix it straight away, only takes a few minutes and does not require parts.

Does this go in as a work order?

From my experience, there are many and varied view points on this. From yes, absolutely, it must be added as a work order, to absolutely not, it did not cost much.

Well, the easiest way to answer this question is to look at what was put down in step 1.

Why was this system purchased? What is the primary aim of the CMMS?

If the aim is to go from breakdown to PM maintenance on the operational plant, then a staff car coming in for a repair is not impinging on this goal. Admittedly, if this happened 15 times a day, then there are other issues that need to be addressed, but if the plant is not affected by this work then a work order does not need to be created.

Bite Off One Little Bit At A Time

If a company is going from having no system to a Computerised Maintenance Management System it may be more advantageous to take one step at a time with the introduction and changes to the way people work.

For example, if you are going from filling in no work orders to this, then maybe only create work orders for the equipment and plant that require it to be done.

The results from this are:

- Less paperwork done
- A smoother transition as less workload on people to enter work orders
- Better attitude of users as not given large workload up front.
- The culture slowly changes

As an example of this the following is a real procedure for the entering of work orders that was set up at a Gold Mining operation with MEX.

Work Orders

A work order is not created for every job done.

Work orders are created in MEX:

- *If the work is not done immediately*
- *If the work requires any downtime of plant*

On each work order the following information is added:

- *Description of the job*
- *Priority*
- *Who is doing the work*
- *When the job is due to start*
- *An estimate of how long the job will take.*

History is added for all work orders: *The information to be added in History includes:*

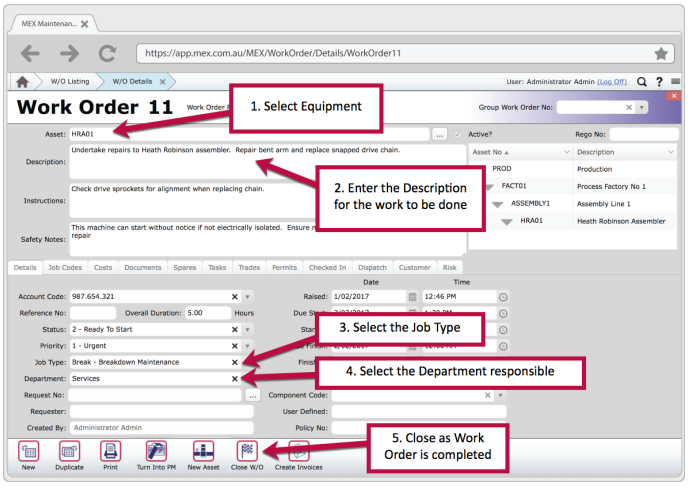
- *Description of what the work done was.*
- *Downtime*
- *Who worked on it, when and for how long*

If the equipment worked on is a Mill, Crusher, conveyor or drive then failure analysis codes will also be filled in.

It can be seen from this example, it is not only when the work order will be created but also what information will be added to each work order.

Picture examples of this often work better rather than written.

For example,



There are many procedures, which need to be addressed with the advent of a CMMS.

Some of these are:

- Will trade hours be entered on work orders?
- Will history be added for every work order done?
- Will FMEA codes be used on failures?
- Will timesheets be filled in by all personnel?
- Will all parts need to be recorded on each work order?
- Will Standing Orders be used for purchase orders, or will purchase orders be created for every purchase?
- Will all requests have to be entered through the job request system?

As stated previous the answer to these will come from what was detailed in step 1. Is the action that is being taken going to help us achieve our aims. Or is it going to just make our life harder?

If you can answer these questions well enough, the balance of the work required to be done in running the CMMS versus the benefit achieved will make it seem like a worthwhile effort.

However, if the tasks required for people to do each and every day do not help achieving this goal then the system will become a millstone.

CMMS's of every type have been around long enough now for us to realize that the term *"feeding the monster"* is very real. When the task each day is just to keep the data entry flowing, than this is a major job within itself. It can then lead itself to a complete failure of the system.

Consistent Data

The other part is consistency. As noted in the example on the Procedure for a gold mining operation, it was detailed as to what was recorded on each work order.

Again, this is very important.

As an example of this, Maintenance Experts was asked a few years ago to review the use of a Computerized Maintenance Management System used at a large steel manufacturing company.

Over the years of use the CMMS at this company, which operated multiple sites all using the same system, there was considerable data record. For example, over a 6-year period over 350,000 work orders had been entered. The entry of this data would have been considerable.

So, the question is what did it show up. As part of the review the Failure codes used on work orders were reviewed to ascertain any trends that occurred.

The trend was clear in the codes. One of these codes was called the Reason for Failure. And the overwhelming number 1 answer was one of the codes called *"FA"*. Which stands for Faulty, not what I originally had thought FA meant.

So, I had to discount this answer from the result set. The next most popular answers were ambiguous. Such as *"Broken"*.

There were many outcomes from the data that was analysed, but this particular set of data was

completely useless. It made me think of all the time and effort that had gone into this data gathering exercise each and every day, and I realized that less is often more. Correct data, is so much more useful, and I would rather have had the data quantified much more than a blanket attempt at tracking the modes of failure.

Two things came from this:

If you are going to classify something make sure the list is discrete. I consider that up to 7 options is acceptable, any more than this is too hard for people to think about. Make sure the reason why your asking this question actually has a valid reason behind it. There is no use recording data for the sake of recording data.

If you pay the paperwork is done

It is always interesting that companies where they get paid for all maintenance work done have no problems in filling in a sheet of what labour went into a job, what parts were used and then handing over a bill to the customer. However, in a nonpaying environment, it is the complete opposite to this. To get a person to fill in anything is difficult and takes a lot of effort to achieve any of this.

Why, the difference. The main reason why paid work gets paperwork:

- They must produce an invoice otherwise they will not be working for very long
- The customer wants a job record so they need to produce one for them.
- If the people doing the work want to continue having customers they need to provide information on what they did for the customer.

It is just so simple and straightforward. The biggest difference between the 2 is mindset.

In the first case of being paid for the work, it is expected by the contractor and the customer that paperwork will be produced. In the latter case, non-paid internal work, it is what value is there in that. Interesting perceptional difference.

"There is no use in recording maintenance data for the sake of recording data. Make sure the reason why your asking this question actually has a valid reason behind it."

Step 6 – Drive It

Someone in the operation must drive the system forward. If there is no one in charge the system will falter and cease to function.

Someone who keeps an eye on the results of what is being entered, provides feedback to people on what has been achieved by the system keeps the system clean and maintained.

Keeping an eye on what is happening can be achieved by looking at a set of multiple KPI's on a routine basis.

For example,

- No. of work orders over due
- No. of request not responded to
- Hours booked versus available.

Then feedback on what result is being achieved.

If the aim was customer service then reporting on response times from the requests and work orders done for customers would be a worthwhile exercise for the motivation of staff to keep using the system, as well as presenting to management the improvements occurring by having the CMMS.

Conclusion

Well there you have it. 6 simple steps to implementing and using a successful CMMS.

It is hoped that the information presented in this E-Book has been useful for your process of setting up or re-invigorating a CMMS.

If you don't yet have a CMMS and are looking for a solution, have a look at the MEX Maintenance Software.

If any further questions need to be answered, please contact MEX at info@mex.com.au

MEX
Maintenance Software
MEX MAKES IT SIMPLE
www.mex.com.au