The importance of Administration and Training in your CMMS Implementation

By Christopher N. Winston
Independent Professional Services
cnwinston@usa.net

One of the now more common tools in maintenance, is the computerized maintenance management system (CMMS), or enterprise asset management system (EAM). The deployment of software and hardware to support many different areas in facilities and plants, especially with fewer personnel is no longer the exception; it is the rule.

The number of plants and facilities with CMMS/EAM software has been increasing each year, but there are varying levels of reported results with each new system deployed. This is of even more concern when you recognize that new computerized systems now often replace old systems that were perceived as not living up to their advertisement.

It was once thought that the number of programming errors, or hardware/software mismatches and similar problems could take the blame for implementations with only temporary or limited successes.

Although there are many important factors leading to successful implementation, today we will discuss two that work well in manufacturing and facility operations: administration and training. These are two areas that often do not garner commitment of necessary resources to the on-going upkeep of the maintenance system. In other words, proper training and administration are the preventive maintenance that maintains the CMMS/EAM.

Overview

Maintenance system training typically includes all system functionality for a select group of users, and then functional training in certain areas or modules related to an individual's responsibilities. It must also include administration of the system, and:

- Be coordinated with need & function
- Should be specific to function & include:
  - Why change is necessary
  - Where it must come from
- Be coordinated with Implementation
- Be coordinated with immediate usage

Having a successful administrative system involves understanding the life cycle of the work order (and other process flows that contact the CMMS/EAM), and in general of the work that takes place in the facility. There is an inherent conflict between the level of detail and the level of complexity required in administrative systems (procedures, forms, work orders, etc.). Obtaining the proper mix of both is required for good administrative systems.

Additionally, it is also necessary to accommodate the expanding functionality within the CMMS to cover purchasing, invoicing, and other functions internally, or through application program interfaces (API's). This activity is designed to create more online collaboration and decrease the number of 'islands of information' for which maintenance has often been accused.

Begin with the end in mind

If we begin with the end in mind, what might the end look like. The end should be a time of continuous improvement based on numerous factors, including maintenance information. The maintenance information should be derived from analysis of preventive and non-preventive maintenance work orders' event, labor, and materials

histories, and transactions created in conjunction with them.

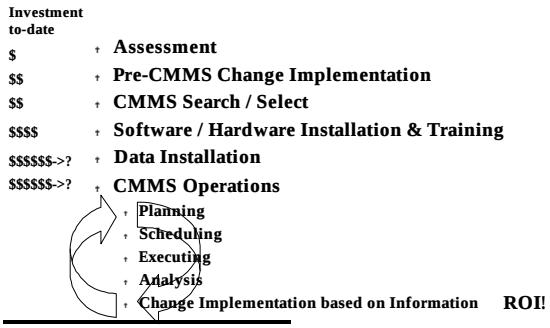
This will include a vast array of information including the cost of maintenance per machine in terms of downtime, incidents and causes of repairs that are emergency or non-emergency, labor and material, etc.

On the surface, this is an attempt to begin to actually utilize the CMMS to identify areas for change, and possibly quantify the value of said change. It is also to continue to achieve greater knowledge on where the maintenance dollar is actually going, in terms of both labor and materials.

The roadmap to a good startup

Before we look at the end result, let's take a brief look at what it takes to get there. Those steps taken to get up and running would include:

CMMS IMPLEMENTATION FLOW



The Assessment and Analysis should initiate your justification process, and help to define the functionality and sizing requirements for your system. Additionally, it should identify prime manual and/or automated processes that can receive change now, before your system is even selected.

Modifications prior to system selection will lesson the chance that you will searche for a system that emulates an undesirable process currently in use. Computerizing a 'chaotic' process increases the problem at least geometrically if not worse.

Any justification necessary would be completed here as well. This will provide direction and priority for implementation, since it will be imperative that the justification items be addressed to recover you investment in a timely manner.

System selection should have resulted in an existing product and version to be chosen that has been on the market for some time, unless your size and special needs allow you to author your own, or purchase a system with source code and modify it.

Once selected and purchased, the system must be installed. This would include hardware and software necessary, and typically be followed closely by training of a number of employees in critical areas, initially, and then periodically to support your implementation in multiple areas as needed.

As if this was not enough, you then must complete the arduous task of data installation. The physical inventory of plant machinery and preventive maintenance development, as well as inventory of parts, and the development of the necessary codes to support the required fields, and those you wish to use in your analysis.

Although Data Installation is one of the areas that takes the longest, and is often stalled due to the large amount of resources expended to get this far, it is imperative that this be completed to get to the next step. The old adage 'garbage in, garbage out' still applies.

This does not mean it will be necessary to identify every piece of machinery down to the last armature and bolt, but by the same token, a furnace, packaging line, tank farm or paint shop is too large. It is necessary to find a middle ground that supports the implementation and functional capabilities of your system. Remember, there will be some

level in you equipment hierarchy at which you generate most (if not all) of your work orders.

The problem now is how do we get from having initial data in the system to having actual results data available that is reliable, and extracting results data out of the system. This is accomplished with good Training and deployment of good Administration systems.

Training helps to insure personnel understand the systems in place and can use them consistently, and that includes the Administration systems.

Training

Training of personnel cannot be over emphasized, but can easily be over done. More often, it is less effective than it needs to be. During CMMS implementation, training is often concentrated on software and covers far too much for far too many.

The areas most often overlooked are in the administration of the system. The original assessment and analysis should have covered workflow analysis. The path of a work order should now be known, as well as other workflows in contact with the CMMS/EAM. Training must be completed for all personnel along the path, and cover the skills required, as well as explain the need for change. This (why? along with how? and what?) helps to incorporate education into your training.

Training on handling the work order from start to finish should be done for all involved, including the originator. It is especially important to educate! Bad historical data can be found easily. Take a walk around the plant and look and view repair work order problem descriptions. If you see "down" or "doesn't work" etc., it will typically be followed by a repair description of "done" or "fixed," etc. - not very useful for analysis. Train the originator to indicate what they observed; why they called.

Numerous other opportunities for improvement exist in training methods:

TRAINING

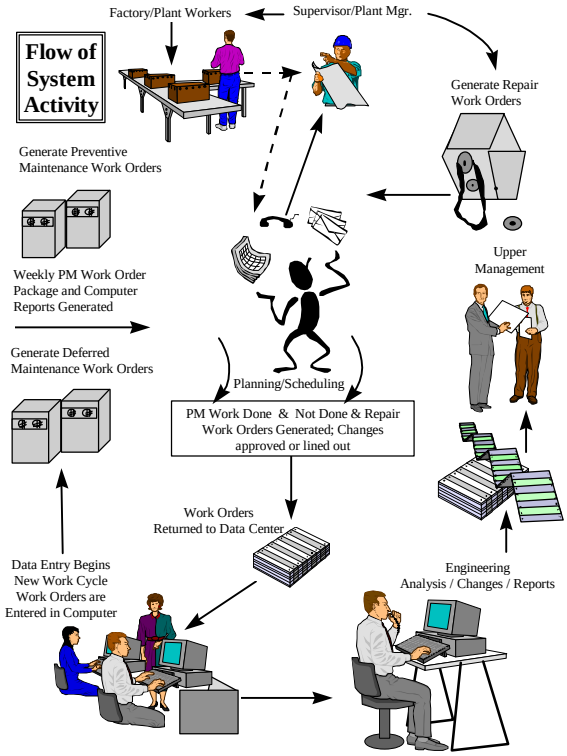
- **Training must be coordinated with need & function**
- **Do not train everyone on everything**
  - **Only a limited number of personnel require carnal knowledge**
- **All Training should be specific to function & include:**
  - **Why change is necessary**
  - **Where it must come from**
- **Do not train too early - coordinate with Implementation**
  - **Trainees should leave class & use knowledge immediately**
- **Train as close to the beginning of the turn as possible**
- **Try for short sessions that end early in the turn**

Administration

The Administration systems should document the life cycle of the work order, and procedures should be in place to identify who needs to be involved at what level and in the most effective manner.

Areas of responsibility

A sample workflow pictorial may look like this:



The Administration of the CMMS will share some resources with other systems. Overall, from the CMMS perspective, the organization may be broken up into 4 or more discreet areas:

The Computer Center maintains the computer hardware, backups, and large processing of work orders and reports (including collating, sorting, etc.).

The Data Center typically handles input of completed work orders, and maintains manual records as needed for disaster recovery, regulatory, or other reasons.

The Engineering group is often called upon to handle analysis of the data returning on work orders and data in the system over short and long terms. These activities are coordinated in support of the Maintenance operations. Engineering will also be called upon for evaluation of preventive maintenance effectiveness, system integration, and implementation of changes as recommended by analysis.

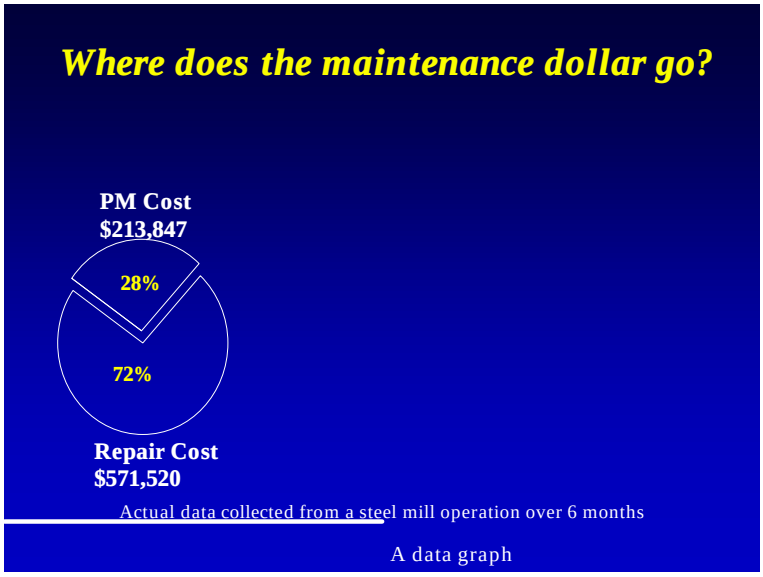
The Maintenance group will handle the planning, scheduling, assigning, executing, reporting, and analysis of both preventive and non-preventive maintenance work orders. This will often coincide with field review of work completed, on-going training, and coordination with Engineering for detailed analysis.

Within the Functional and Technical organizations, will be the responsibility to customize, configure, tailor and maintain the CMMS. This will typically be the area in which all 4 areas must contribute, and typically resides in the Functional areas, or the Functional side of the Information Services / Technology group, as a hybrid of functional and technical personnel working together to bridge the gap between organizations.

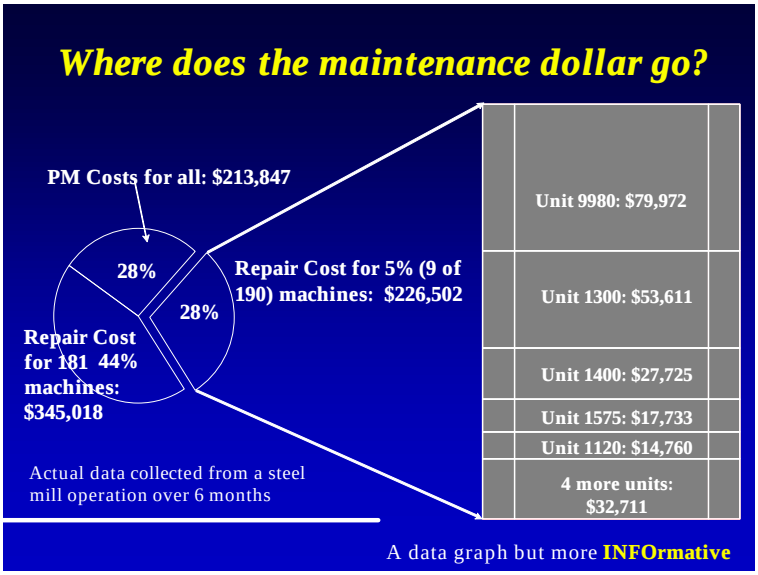
Summary

Training and Administration provide the foundation for an installed system to become an operating system, on a daily basis, that contains good quantity and quality of data, representative of plant operations, that can be used for analysis.

When executed well, both areas will be considered at the beginning of installation, through every upgrade, expansion, and change in overall business operations. The better planning is done initially and along the way, the greater chance the CMMS will have of continuous usage, and delivering long term and continuous improvement, through the information it provides.



When does data become information? Allow me to explain by example. 28% by itself is data. 28% of the total maintenance expenditures for the period is still data.



But when 5% of the machinery is found to take 28% of the maintenance dollar, just to repair them (preventive maintenance excluded), the disproportion of resources becomes information, and the mere statement answers two questions? Where does the maintenance dollar go?

How do I begin to justify re-allocation of resources to my more problematic or costly areas? The computerized maintenance management system exists for this purpose. More versions of CMMS are enhanced to provide greater standard reports, and more importantly greater capability to generate your own reports, based on local key performance indicators. This area will be covered in another paper.