Harnessing the POWER of CMMS

By Preston Ingalls

> "EQUIPMENT MAINTENANCE COSTS CAN BE EQUIVALENT TO 5 TO 15 PERCENT OF A COMPANY'S SALES REVENUE, BUT POOR MAINTENANCE CAN EQUAL 20 TO 25 PERCENT OF A SALES DOLLAR."

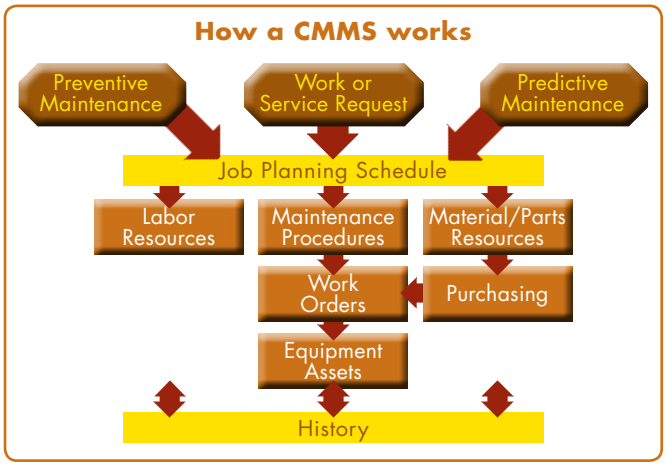
Although the majority of enterprise software systems have some form of maintenance module, many are inherently loosely structured and offer only very basic capabilities, mostly for tracking costs. Most of these modules cover maintenance activities, but few offer reliability functions.

So, what is a Computerized Maintenance Management System (CMMS)? Well, in very simple terms it is a database to help manage assets, whether they are rolling stock (fleet) or facilities. An effective CMMS is critical today because *information is king* and companies with strong abilities to manage information will not only be better positioned to survive these challenging times, but also to prosper.

Lack of proper management of assets can depreciate the value of those assets significantly. The purpose of a CMMS is to aid in the management of assets. It can help improve performance and maintenance department productivity, track and control expenditures, and reduce capital expenditures and operating costs (CAPEX and OPEX), as well as prolong the life of an organization's assets.

Having had the opportunity to work with numerous software programs over my 42 years in maintenance and engineering, I have seen some excellent programs, some overpriced ones, and many lackluster ones. It's not like owning a wristwatch, where time is time and the medium (the watch) seems of little concern with respect to the end product (tracking time). A CMMS is much like a race car. Not all automobiles can win a high-speed race, but they all look very similar on a track. In the "race" to reduce costs and run operations more efficiently, some programs are better designed for the track than others.

For the purposes of this article, I would like to focus on the CMMS, which is often a "bolt-on" program that interfaces with the Enterprise Asset Management or Enterprise Resource Planning program an organization would have managing its accounting activities.



The graphic shows how various activities and information are funneled through the CMMS, which can then yield reports used to measure progress and to identify trends to improve.

There are three approaches that can be used when taking on the task of database management to support equipment: Enterprise Asset Management (EAM), Enterprise Resource Planning (ERP), or a Computerized Maintenance Management System (CMMS). The CMMS, for the focus of this examination, will be considered a separate, standalone program that will interface with the ERP or EAM program.

A good CMMS system needs to provide basic functions to manage maintenance. It must:

- Manage equipment repairs and work orders.
- Manage equipment repair costs.
- Manage PM and PdM.
- Provide the capability to plan for materials, labor, tools, and equipment used in scheduled maintenance.

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- Provide the capability to track inventory.
- Create easy-to-follow instructions for mechanics to perform work to be done.
- Provide the capability to record data to track history and costs of maintenance.
- Include reporting for management purposes.

WHAT ARE THE BENEFITS OF USING A CMMS?

- Aids in the detection of impending problems before failure occurs, resulting in fewer failures.
- Results in less unplanned downtime and fewer job delays.
- Improves maintenance information on costs (labor and materials).
- Results in better care, extending equipment life and lowering CAPEX expenditures.
- Provides a tool to aid planning and scheduling, which improves staff productivity.
- Controls inventory more efficiently, allowing better spare parts forecasting.
- Automatically schedules repetitive PM activities based on meter hours, calendar time, or production units (tonnage, cubic yards, etc.).
- Offers means to monitor spares, minimizing shortages and helping to reduce existing inventory.
- Maintains optimal equipment performance and reduces operating costs per hour or per unit.
- Encourages standards and procedures to improve the quality of maintenance activities.
- Converts data into meaningful information through reports for analysis.
- Helps to track all maintenance requests to prevent lost communications.
- Affords a means for tracking backlogs, determining priorities, and scheduling work.
- Compares maintenance expenditures in a given period against previous periods to measure effectiveness of improvement efforts.
- Tracks warranties on equipment to prevent performing covered work.
- Provides a robust process as the the basis for work management and cost control.
- Gives standard task instructions or job plans for repetitive work.
- Allows adjustment of PM by providing a method to monitor failure trends and to examine major causes of equipment breakdowns.
- Provides a means to compare actual task time to estimated task time to improve labor utilization.
- Offers the means to track equipment history.
- Provides the ability to have a centralized repository for maintenance information. ■

In the next issue of MCS, Part Two of this three-part article will deal with how to select the right CMMS program. Part Three will cover implementation pointers and pitfalls to avoid.

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PART II

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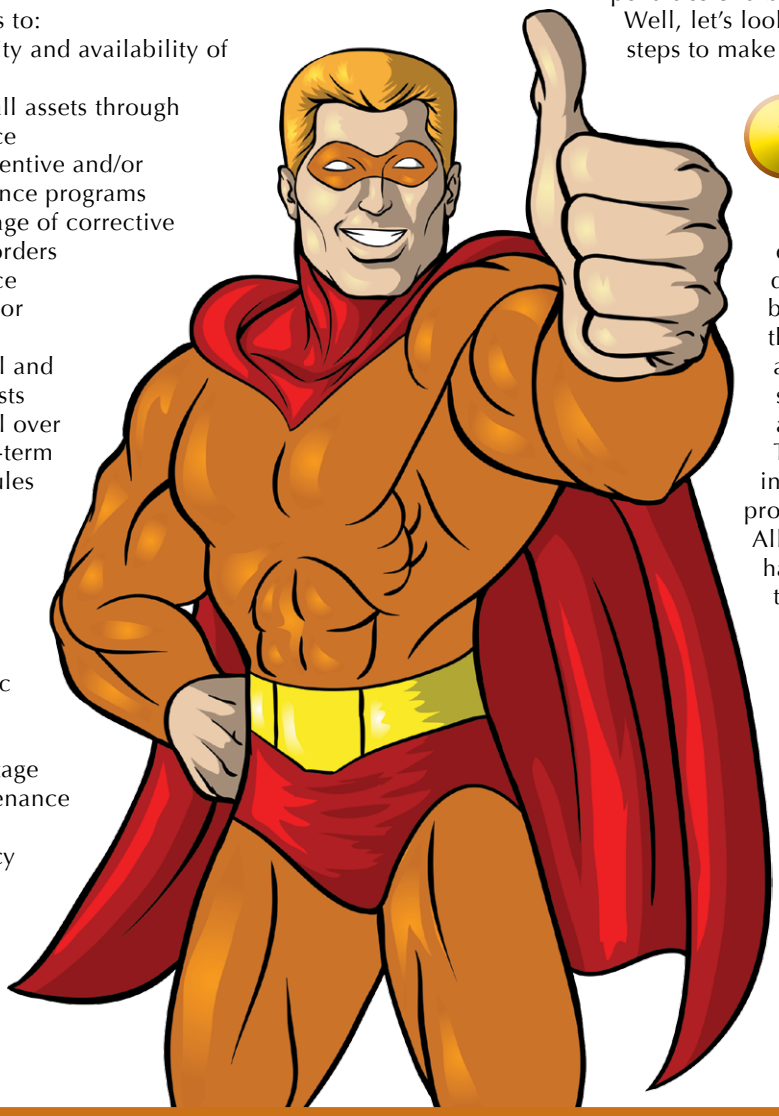
This is the second of a three-part series on Computerized Maintenance Management Systems (CMMS).

Basically, CMMS helps to:

- Improve the reliability and availability of equipment
- Increase the life of all assets through efficient maintenance
- Set up efficient Preventive and/or Predictive Maintenance programs
- Reduce the percentage of corrective maintenance work orders
- Improve maintenance productivity and labor utilization
- Create better control and understanding of costs
- Create better control over short-term and long-term maintenance schedules
- Predict and manage the maintenance budget accurately
- Create and maintain a work history for the purpose of isolating problematic equipment and activities
- Increase the percentage of preventive maintenance work orders
- Improve the accuracy and availability of spare parts and materials

Sounds good, but, with so many options available, how do you find the right system for your organization? It is an important decision because you will enjoy the fruits of a good choice or pay the penalties of a bad choice for years to come. Well, let's look at a logical sequence of six steps to make the selection.



1 CHARTER THE TEAM

Establish your project Lead. This person should be a go-getter, be respected across the organization, and have time to devote to the project. It could be an IT project manager or the maintenance manager. We also recommend a high-level sponsor to provide support and to help remove barriers. They don't need to participate in the meetings, but need to provide senior management clout. All affected departments should have a representative on the team. Essential team members will be pulled from daily operations for a substantial commitment of time (not just an occasional meeting).

2 DEFINE USER REQUIREMENTS AND OBJECTIVES

One of the first tasks is to identify the functions or user requirements that will be involved. These will be rank ordered by their importance. Establish goals as to what the system needs

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to deliver or correct. These will serve as specs to examine when comparing programs. This should be prioritized and rank ordered based on wants and needs. Create a list of problems with your current system (focus on your maintenance department or equipment division); create a list of objectives (what you want to accomplish); and create a list of user requirements or functions you need the program to provide.

3 DEVELOP RFP

The next step in the process is to develop a Request for Proposal (RFP). This proposal, including all user requirements, is sent to vendors requesting information on what they can do for you, including pricing and servicing descriptions. The RFP should provide enough detail so the vendor knows what is needed.

4 IDENTIFY THE VENDORS

You will have to do research to find a source of potential vendors. Consider consulting with trade publications, which usually have a list of top CMMS vendors; ask others in the industry what product they use; approach any industry trade groups for suggestions; look at vendors with tenure; and look at companies similar to yours (size and industry)—what are they using? Do not include more than 12 potential vendors because evaluating excessive choices becomes too complicated.

5 EVALUATE VENDOR PROPOSALS

Based on the user requirements, create a short list for a comparison of the products. After receiving the proposals from vendors, match the proposals to the specifications and rank the results. Create an Excel spreadsheet that evaluates three vendor products against original specifications. Select two or three vendors with the closest matches to the specs. Each of the final vendors will be asked to make a half-day demonstration of the product. If a demonstration is not possible, the vendor will be asked to provide a fully functional copy for evaluation. The project team should rate the demonstrations.

6 EVALUATE PRODUCT PACKAGES

Develop an agenda for the demonstrations. Communicate this agenda to the vendors and insist the companies use it. If you don't, the salesman may demonstrate only those functions he knows his system does a good job on. You want to see all the functions demonstrated—not just the strengths of the program. Have a list of questions about the functions to be demonstrated. Set up a selection matrix for each member of project team to use in evaluating the vendors' demonstrations. References provided by each vendor should be formally checked, and a preliminary selection made. An on-site visit to a reference customer should be conducted. If the results of the on-site visit are acceptable, the team can provide the thumbs up for approval. The purchase will be negotiated and completed.

Now the easy part is done—implementation is next. ■

For a comprehensive list of requirements for a solid CMMS, check out this article on the MCS website. The conclusion to this article will be in the next issue.

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PART III

By Preston Ingalls

The previous two articles on Computerized Maintenance Management Systems (CMMS) dealt with why we need one and how to select one. The focus of this article will be on avoiding traditional issues in implementing one.

If you were to ask most equipment or maintenance managers who have recently implemented a new CMMS, "How did it go," the response would most likely sound like this: "We finally got it in. It took longer and cost far more than we anticipated. I am glad the bulk of it is over. Not sure when we will see a return though."

We would like to say that, "Build it and they will come," but the actuality is that many CMMS implementations fail to produce the expected returns. It is because they were poorly managed and executed. So, why are CMMS purchases over-promised and under-delivered? A 2011 survey found that 91 percent said work order management (WOM) is the most important feature of CMMS software, while only 34 percent say their WOM process is working well; 78 percent of respondents did not achieve ROI goals, while 50 percent said no ROI was achieved from CMMS software and 28 percent said they did not achieve anticipated ROI.

But expectations and deliverables are more likely to produce a gap. The table shows the difference between expectations and the degree that the software implementation produced an excellent rating from the same survey respondents. Why is there such a gap between what we want and what we get in regards to CMMS implementation?

While many would jump at blaming the software package, it is often deeper than that. Let's look at nine reasons the software program fails.

Failure to allocate adequate resources. Often, the price of the program is just a fraction of the total cost of implementation. Companies often fail to allocate sufficient personnel dedicated to implementing the program. Or they may have underestimated the total cost.

Lack of management commitment and engagement. Management is responsible for the effectiveness of this investment and needs to take an active role from the beginning. Inadequate commitment of labor resources, poor viability of support, insufficient capital allocation, inadequate training commitment, and lack of monitoring project progress can be the death, or at least, the demise of a potentially good software implementation.

Importance to Respondents		Excellent Performance Level	
Work Order Management	91%	Work Order Management	34%
Spare Parts Management	73%	Spare Parts Management	20%
Planning Function	72%	Planning Function	19%
Scheduling Function	71%	Scheduling Function	18%
KPIs	59%	KPIs	13%
Budget/Cost Analysis	48%	Budget/Cost Analysis	9%
Document Management	43%	Document Management	10%
Condition Monitoring (PdM)	39%	Condition Monitoring (PdM)	6%
RCM	36%	RCM	6%

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Failure to improve maintenance systems. Buying a word processor program such as Microsoft Word does not make you a better writer. If you struggled with grammar, spelling, diction, and style, then expecting a software program to improve those is beyond reasonable expectations. Ineffective systems and processes can mean trying to computerize poor processes and practices. Business Process Improvement (BPI) is a way to standardize and improve the maintenance practices using process mapping, reengineering, etc. A formal BPI review includes organizational structure, roles/responsibilities, internal/external rules and regulations, policies, mission/vision statements, process workflow maps and metrics. It should include an integration of Best Practices to maximize the ROI.

Garbage In-Garbage Out. Without an emphasis on data integrity and quality, folks will be frustrated from extracting vague and meaningless data. Using naming conventions and failure-cause-remedy codes to standardize what things or activities will be called can help to minimize this issue. Conducting periodic audits of work orders to ensure completion and accuracy will also help.

Lack of integration with other information systems. Failing to adequately map the information flow to other programs like ERPs can result in double entry and misinformation.

Viewing the CMMS project as a technology project. Too often, CMMS projects are treated as technology projects. This means the emphasis is more on using IT approaches without an understanding of the fundamentals of maintenance practice and requirements. Therefore, the temptation is to evaluate potential programs on their technology, on the various features and functions that one system offers over another. CMMS projects are more about change management than about technology.

Picking the wrong program. Far too often, CMMS programs are chosen that are inappropriate for the solution that is needed. For example, features and functions of one software package may be appropriate for maintaining rolling stock but may be unsuitable for an asphalt plant or concrete plant because of the inability to structure an equipment taxonomy or hierarchy.

Poor project management. Project plans must be inclusive and accurate. Variances need to be identified and addressed before the project falls woefully behind. Sound project management principals can help to prevent delays and scope creep, as well as missed targets.

Inadequate change management. Change Management using good principles of managing change is critical. John Kotter's Model is effective at managing change. This means starting with a sense of urgency, developing a support group, and creating vision and goals. The implementation of a CMMS is a change in process and needs to be managed as a change effort. This focus is often overlooked or underestimated. Change cannot be happenstance or serendipity. It must be well thought out and carefully planned. Communications and training is essential here.

A CMMS is only as good as the implementation strategy. That strategy begins by avoiding the mistakes others have lived through. ■