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Articles

Some advisory opinions and technical articles follow. We hope they will be helpful to your maintenance activity, and your choice of software.

[Typical CMMS Implementation for a Facility \(PDF\)](#) ^[1]

[Equipment relations in CMMS implementation \(PDF\)](#) ^[2].

CMMS Considerations

Confessions of a CMMS Developer

Paul Davsion

If you pay tens of thousands of dollars for Computerized Maintenance Management System (CMMS) software, you are paying tens of thousands of dollars too much. If you need an Enterprise Asset Management (EAM) program, think again about whether you need an EAM. An EAM might be the answer to your total asset management, but it could also lead you to unnecessary software support costs.

Save money and trouble by getting a system that meets your requirements. Simple management of workflow and preventive maintenance will reduce downtime and costs. Define your reporting requirements before you purchase.

We all like to impress our maintenance management friends with acronyms like Service Lifecycle Management (SLM), or Overall Asset Productivity (OAP). We think that perhaps watching Key Performance Indicators (KPI) would resolve our maintenance issues. Preoccupation with this management knowledge can lead us away from our requirements. You might only need to:

- Manage the people who perform maintenance.
- Control costs and manage inventory requisition.
- Fulfill the reporting requirements of your organization.

Reliability Centered Maintenance (RCM)

Applying RCM can be simple. The daily routine of RCM in our CMMS is controlled by two

factors:

- **Equipment Criticality (Priority)**

In practical sense, Criticality and Priority are the same. Assign equipment a priority that is the default for work orders. In our CMMS this equipment Priority is default to work orders opened for that equipment. Keep the levels of Priority simple to only about 3, like Priority 1, 2, or 3.

- **Condition-Directed Maintenance (CD Tasks)**

Condition-Directed maintenance is preventive maintenance (PM) that is scheduled by predictive readings. A common example is an oil change that is scheduled by oil analysis. A CD Task allows less work and expense than regular scheduling that might occur too often.

PredictMate ® works with the CMMS for this.

Proactive - Predictive Maintenance

Predictive Maintenance (PdM) should be more than historical failure analysis. In PredictMate ® we are performing proactive failure analysis. We report the impending failure of equipment by analyzing values from previous machine parameters data that exceed or trend toward a maximum or minimum alarm limit. This is true proactive maintenance.

Equipment Numbering

I have endured many stories about the logic that should go into an equipment code. The only requirement for an equipment code is to be unique from all other equipment codes in the local system. My favorite equipment number format is two characters followed by numbers, like "AA0001", "AA0002", ...

Put all other related identifier codes into validated columns. These identifiers include columns for Location, Preventive Maintenance Group, Inventory, or Vendor with strict rules on how the codes relate to other tables. An equipment code that contains many identifiers cannot be validated and eventually users violate the un-validated rules that were intended for the equipment code. For example a code like "AABBCC002", where "AA" is Location, "BB" is Equipment Group, and "CCnnn" is the unique equipment code, would seem logical. But eventually even this simple rule is broken, and new equipment is not assigned a code that can be sorted with the original codes.

However, if previous equipment numbers exist, and are used by other systems, try to use that equipment number. Avoid creating another equipment number that requires cross-relations to existing systems.

In our system the local unique identifier is "Unit Code + Component Code". A component could be moved to another unit, for example a motor is a component that could be moved from a pump to another pump. The unique key in a host, where remote sites are combined, is

"Site Code + Unit Code + Component Code".

Creating Your Database

Relating all equipment by a parent to child relation is required in some systems, but this can lead to confusion and a difficult implementation. Instead, select equipment by a group or location code, or even tagging, which is sufficient for reports without complicated, nested parent to child relations.

If you need every asset in a system, make a database for such assets, separate from the daily routine of work order and inventory management. I have seen systems that had 20,000 equipment records, but only needed less than 2,000 records for work management. Let the CMMS be a work management system. Put the total asset management in a separate database. We have an update routine that can combine the CMMS history with a total asset database. Usually filtering is not adequate to separate unused equipment records.

Let the vendor or a third party set up your initial CMMS database. Many systems fail because they are used differently than was intended by the developer for his clients. Let a professional analyze your situation, then develop a good beginning database of equipment and related preventive maintenance scheduling. Training will proceed much easier if the system contains sensible information familiar to your users.

Avoiding Dependence on a CMMS Vendor

Let your favorite local developer create your custom reports. Define your requirements simply as report items or data columns. This is the data that you must upload or relate to other systems or reports within your organization. We provide a data dictionary that explains the tables and data columns in our CMMS. We provide replication to commonly used databases.

You can define a simple database of items required for your report. Then identify the items to be obtained from the CMMS. Keep that table separate from the CMMS database and relate it to the CMMS by unique keys one-to-one. Your table has no dependence on the CMMS vendor. The CMMS items in your report are objects that could be retrieved from any CMMS. I would love to charge you for custom reports, but I confess that you should get local developers to provide your reports from this data in a platform that is compatible to your other reporting requirements.

Owning CMMS source code is not needed, except for your custom reports. If you move to another CMMS or EAM, owning your data is more important than out-dated source code. Most CMMS systems can accept the same data for common CMMS functions.

Your CMMS should run even when the Internet is down. If your data resides on a server in another country, you have less control of performance and disaster preparedness.

Control the required number of concurrent users.

A concurrent user can change and add information, not just read information, at the same

time as other users. Most CMMS and EAP systems charge by the number of users or seats. You can reduce the purchase cost by reducing the number of concurrent users required.

- Allow only a few people access to changing the CMMS. This might be a clerk, manager, and lead technician. They control the printing of reports and work orders and the completion of work orders. This maintains a better control of the database with few errors. This can reduce the requirement for concurrent users to 5 or less and might reduce the number of computers and related hardware that you purchase.
- Work request modules and updates from email can reduce the number of concurrent users required. This applies where many people occasionally request work, but do not want to navigate the CMMS. We added buttons in the work order window for sending and receiving work orders via email. Email comes to a table where you can select or decline each email as a work order.
- For reporting, users can open the CMMS read-only, which is not considered a concurrent user against the limit for concurrent users in our system.
- Replicate data to about any commonly used database as a reporting server. This reporting server will have separate control of user access, not limited by the CMMS vendor.

In conclusion, one more acronym: Keep It Simple Sir (KISS), and your CMMS will serve you well.

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