Developing CMMS Implementation Templates

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Throughout the course of this article the term CMMS will apply to the maintenance module of Enterprise Resource Planning systems, Enterprise Asset Management systems and stand-alone maintenance management systems.

Each year, billions of dollars will be spent, in many different countries, on implementing CMMS and enterprise level systems. Some corporations, such as RIO TINTO and BHP, have attempted to circumvent a lot of this cost by developing implementation templates for use across their global operations.

CMMS implementations follow basically the same course every time. Yet most times there is an attempt to re-invent much of the approach. However, in general, maintenance is maintenance and apart from differing business rules the majority of the information required to set up the system will remain similar.

Although the template designed by these particular organizations are specific to their needs, modern technology and the rising awareness of CMMS systems have created the opportunity for creating a generic template for **all** implementations. This is becoming possible through standardized coding philosophies, warehousing of often-required data and tapping into on line resources such as vendor cataloguing systems.

Any template for CMMS implementation needs to have a focus on the following areas. Again although modern CMMS systems are able to cover areas of operations, HR, financials as well as maintenance the focus here is on the maintenance end of any implementation.

1. **Defining of corporate direction and rules**
2. **Highlighting areas of mass data requirements**
3. **Defining training required**
4. **Implementation and embedding processes**

Addressing these areas, initially, is a complex task that requires much thought in order to define these in a generic sense so that they can easily be adapted to any implementation. An attempt has been made to outline the various areas where guidelines can be created so that all that is needed is the refinement to suit the requirements of each organization.

Defining Corporate Direction and Rules

This is the **most** critical of all areas as it sets out the requirements for all other areas that are to follow. Many problems during the later stages of CMMS life are due to poor attention during this stage of the implementation thinking process. By developing decision making guides as well as standardized approaches the resulting implementations will at least cover all of the relevant issues pertaining to efficient CMMS.

This is a wide-ranging area covering such items as:

1. **Define the high level Key Performance Indicators (KPI's) that the corporation wishes to use to monitor and control its performance. For example:**
    a. Unit costs
        i. Unit costs for maintenance
            1. By Equipment
            2. Per employee
            3. As a measure against Estimated Replacement Value of assets
    b. Overall Equipment Effectiveness
        i. Availability
            1. Mean Time Between Failure (MTBF)
            2. Mean Time To Restore (MTTR)
        ii. Utilization
        iii. Quality
2. **Defining what is capital works and what constitute operating costs**
    a. What criterion determines a plant improvement?
        i. What constitutes like for like replacement?
        ii. Changes to Process and instrumentation drawings?
        iii. Changes to operating improvements?
3. **Defining authorization levels in dollar cost terms of each role within the maintenance organisation. Thought needs to be given to bottlenecks that any levels here may create.**
4. **Determining a prioritization system that will allow the best use of resources across the corporation. For example:**
    a. Are resources to be used across various plants?
    b. Are resources to be used across various sites?
    c. What are the structures of the work groups or teams to be included?
5. **Determining what are the definitions of various types of work orders.**
    a. Safety
    b. Capital
    c. Maintenance
6. **Determining what are the definitions of various types of maintenance and setting levels to be used as benchmarks.**
    a. Preventative Maintenance – 50 %?
    b. Predictive Maintenance – 30 %?
    c. Corrective Actions – 10 – 15%?
    d. Breakdowns - <5%
    e. Standing work orders – Their needs to be an initial focus on this area, determining which items need to be covered by standing work orders. Although there are many approaches it is best to utilize these for overhead items such as training, holidays and breaks. Use of these as blanket work orders elsewhere will blur the results available from the CMMS system.
7. **Defining business processes and the KPI measurements required for controlling these. Examples may include:**
    a. Backlog management
        i. Age by Priority measurement
        ii. Number of safety work orders (trended)
        iii. Planned work orders per work group
    b. Planning/ Scheduling systems
        i. Planned/ Scheduled ratios
            1. Planned / Scheduled – 80%?

2. Planned / Unscheduled – 15%?
3. Unplanned/Unscheduled - <5%?

ii. Stores Service rates - 95%?

c. Execution and Data capture systems
   i. Highlight the standard of coding required to provide a base for future analysis
      1. Fault causes?
      2. Work done?
      3. Duration?
      4. Parts used?
   ii. Standardized text entries for free text?
d. Engineering works
   i. Criteria for review and execution stages
   ii. Monitoring / measurement of effectiveness
   iii. Integration for execution
   iv. Criterion for inclusion, including justifications process
e. Analysis and actioning loops
   i. Root Cause Analysis processes and reporting required for accurate targeting of the "critical few" items.
   ii. Measurement of effectiveness
f. Associated purchasing and inventory functions not covered within the scope of this article.

Highlighting areas of mass data requirements

This area in particular is becoming easier to facilitate in a rapid manner. Large data libraries are becoming more and more accessible. For example:

Parts Lists Creation - Many vendors are beginning to create online parts listings for their equipment. These can easily be transferred between the online vendor to the CMMS systems. Some CMMS systems can even support live linking even further reducing the workload for this task. Other than online parts listing this will also require many hours of pouring through manuals. A database of such materials will cut short this phase by at least two thirds of the time if not more.

Other areas that will require attention are:

Plant Index Creation – A standard for developing this in a manner that will allow flexibility for changing cost centers, work teams or additional equipment is needed. This is an area where I have seen a lot of issues regarding future usability of the system. It is also an area that should be able to be standardized in an easy manner.

The laborious side of this task is in creating the equipment profiles themselves, and taking this to the level of nameplate data.

Equipment Strategy Development – This is another area where there is starting to develop large libraries of strategy information. Also many vendors have this information online. So initial strategies can easily be created. However it is recommended that a corporation look at some form of optimization from the outset of setting up a CMMS system. If this has not already been done it will form the main part of the implementation labor required. There are several methods by which this is done such as Preventative Maintenance Optimization, RCM2 and Risk Based

Strategy Development. The purpose here is not to recommend any particular process, merely to raise awareness of this necessity.

Work Order Templates – Again there are a number of databases on this topic already in existence. And there will be many sources for information on these including the equipment strategy database, trouble shooting guides from manufacturers and an initial library of corrective actions either from manufacturers or from employee knowledge and skills.

Defining Training Required

As is widely stated no maintenance program has a chance of succeeding without supporting role specific training.

During the stages of defining the core business processes of the maintenance function, specific roles and their accountabilities will become evident.

Training will need to be developed, or adapted, in using the system to accommodate the business rules and processes of the specific facility. The role specific focus of the training is required so that each of the employees know what their responsibilities, accountabilities and what the role relationships with others in the organizational structure are.

This particular area is a good area for developing a flexible template according to various business process models / CMMS systems. With core training modules staying the same at all times.

Implementation and Embedding Processes

This area is on standardizing an approach, in terms of time frames, to efficiently carry out all of the work, and the associated follow up work, from all of the above areas.

It should also, by necessity, cover a standardized approach to inclusion of report development and usage into business processes. This will establish early disciplines to ensure that quality of performance follows from the quality implementation.

In short this area is the overall guide to how all of the remaining areas need to be tackled.

Conclusion

The development of standard templates for implementing CMMS should be the driving force behind any consultancy and / or corporation working in this area. The benefits, as explained above, will unlock the potential of the CMMS system to create even further improvements than are currently experienced. Without pursuing this area there will continue to be poor implementations, over running of already swollen budgets and poor future use of the data within the CMMS system.