

## Reaping the Benefits of CMMS

Written by Derold Davis and Joe Mikes, Westin Engineering  
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### **Optimizing a CMMS purchase requires purpose and dedication from beginning to end.**

The effectiveness of maintenance can make the difference between success and insolvency, between limping by financially and organizational excellence. Many companies and organizations consider their computerized maintenance management system (CMMS) and processes as catalysts for achieving a competitive advantage. Yet, good intentions are only part of the recipe for success.

How do organizations leverage a CMMS into a competitive advantage? Top organizations start by understanding their maintenance environment. They analyze their business needs, match a system and processes to those needs, and apply formal processes to select and implement the new system. In addition, these organizations achieve unified focus on their goals through a dedicated core team and/or a system champion.

### **Common building blocks**

Successful CMMS selection and implementation initiatives include five essential building blocks. Each piece of the selection and implementation process builds on the preceding steps.

The foundation includes streamlined business processes that are based on best practices and a positive return on investment (ROI) and focus on asset management. This stage also documents performance indicators so organizations can measure results and ROI.

Developing comprehensive system and functional requirements during the selection process ensures the best system for the requirements. Requirements must support the business processes and best practices.

Change management assures the organization makes the changes needed for successful implementation.

A complete implementation plan addresses data preparation and conversion, system acceptance testing, and training. Training must integrate the new system capabilities into the streamlined business processes.

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The final component is proving success by measuring ROI and key performance indicators.

### What does success look like?

How can a fully implemented and productive CMMS be identified? Following are the earmarks of a successful implementation:

- The CMMS is used throughout the organization and has a broad user base.
- Streamlined business processes and systems have been integrated to form a new business environment.
- All work is processed and documented using the system.
- Planning and scheduling functions are implemented and used.
- Complete project management tasks and a job plan library are developed and used.
- Work management and materials management are fully integrated.
- Positive ROI in six to 36 months is planned and achieved.
- Key and other performance indicators are used to gauge success and guide activities.
- Overall maintenance costs have been reduced 20 to 40 percent.
- Inventory valuation has been reduced 20 to 30 percent.
- A team environment exists where all related departments work together.

In order to achieve success, the core team and executive committee must maintain project focus during each building block, throughout the entire project life cycle, and after implementation. The core team must take direct ownership of the project with guidance and direction from the executive committee when roadblocks occur that the team cannot handle. Following is an in-depth discussion of what makes up each of the essential building blocks of a successful CMMS selection and implementation project.

### Business processes

A successful CMMS project starts and ends with ROI and key performance indicators to measure success throughout the process and over time after implementation. Like landmarks, these indicators help determine if the project is on the road to success, if it has strayed from its original purpose, or if it has been derailed altogether. However, key performance indicators are not the road map to implementation.

The map that identifies the direction is made of the workflows and responsibilities (current and proposed) of each player. When combined with a gap analysis, this map confirms the

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responsibilities of each employee type and helps measure the differences between current responsibilities and the CMMS vendor's recommended responsibilities to optimize software performance. The vendor should know exactly what data is required, when it is needed, and from which sources. Vendors may even recommend skills needed to perform this function. If the organization realizes that current conditions are unknown, it must invest a significant, coordinated effort to get the answers before the project can continue.

All too often, software is blamed when it does not perform some essential function, such as not managing warranty. When people observe a failure in one functional area, they assume the entire system is a failure. This can jeopardize the entire system. In some cases, the new system is actually shut off and the old system put back in use. The truth is each organization is responsible for identifying and re-engineering all its processes and aligning those processes with the selection criteria.

Many books and references explain how to optimize an organization through process re-engineering. Find one that applies and adapt the principles or seek professional assistance. To start a gap analysis, gather workflow, responsibilities, and recommendations from the CMMS vendor. This information will help the organization move quickly. The ease or difficulty of following this road map depends on how well the CMMS aligns with the organization's needs as well as the number of goals the system will address. The gap analysis also will help the project leader identify areas on which to focus change management activities throughout the process.

### **System and functional requirements**

Basing system and functional requirements on revised and streamlined business processes is the best foundation for a fully implemented, fully utilized system. This approach provides the opportunity to review and rework core business processes to ensure alignment between business objectives and system functionality.

Developing detailed system requirements that match the business processes ensures the best fit. More detailed requirements allow for more opportunities to ensure a proper fit. This approach also reduces the need to customize software and pays off in faster system implementation with greater opportunities for full usage. There are few, if any, surprises because every nook and cranny of the software has been scrutinized before selection. This approach also creates a strong foundation for acceptance testing.

If an organization is flexible in the way business processes are performed, another option can

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work well also. This approach puts the business process redesign after the CMMS selection to fit the organization's processes to the system's strengths. Whichever approach is selected, the result must fully integrate system and business processes. Furthermore, this does not eliminate the need for detailed system and functional requirements. If anything, it strengthens their need.

When an integrator is engaged to assist in implementation, the organization needs detailed requirements to ensure that an integrator can ensure the best software fit+especially if the integrator selects and provides software. When less is known about a system's functionality and capabilities, the risk of a mismatch increases. Mismatches mean higher costs and more problems during implementation.

### Change management

In nearly any situation involving change, people experience five distinct phases: denial, resistance, understanding, exploration, and commitment. Movement through these phases occurs at different rates for different people. The discipline of change management involves understanding this process and proactively affecting progress toward acceptance of the new situation or system.

With the help of effective, consistent communication, most people move past the difficult stages of denial and resistance. Once CMMS software is installed and the data converted, the manager must identify the phase each employee is in. Managers can positively impact change by providing extra time and more training, and maintaining open lines of communication. Discuss the activities and actions observed with employees to determine what they need to adjust to the new system and responsibilities.

Some organizations push through implementation before any celebration or gratitude occurs. People are more open to change when they can reflect on accomplishments and share incremental wins. This is also a great opportunity to discuss upcoming hurdles and rewards (for example, pizza parties) that will mark those wins.

### Implementation plan

Project implementation plans often fall short of the actual efforts required for success. A comprehensive and detailed implementation plan considers:

- Data preparation to identify all data collection, data conversion, and data loading steps

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necessary.

- Data standards identification and development.
- Hardware and software (operating system, network software, database, etc.) installation and operational confirmation.
- System installation and acceptance testing.
- Functional position training based on skills, business processes, and the integrated system.
- A schedule to train users as close to going live as possible.
- Implementation and training effectiveness review.
- Identification and development of reporting requirements, especially key and other performance indicators.

As the system reaches full implementation, its use and the new business processes will begin to weave into daily life. This is a good time to audit the new system and business environment for compliance with business objectives as well as continuous effectiveness and improvement.

The post-implementation audit should look at multiple roles and functions that illustrate the on-going performance of the system. A defined system test should verify technical system functionality. Additional monitors should check the relationship between the business process and software on a semi-annual, or more frequent, schedule. Software utilization should be audited frequently at first, then monthly, quarterly, and annually.

Most organizations monitor equipment reliability or the percentage of system downtime. While these are important, they should first check the activities and habits of people. A CMMS system audit determines how people interact with the system and the extent of system usage.

### **ROI and key performance indicators**

The benefits an organization hopes to achieve should be outlined and measured in terms of ROI. Key indicators must be quantifiable and measure tangible business benefits such as the percentage of work-order backlog, inventory turns, warranty ROI, or the number of emergency requests per week. They provide a baseline to quantify benefits to the organization in many different aspects of the business. Key indicators also will help prioritize options during selection and implementation.

### **Avoiding pitfalls, achieving benefit**

It is easy to give up when problems occur during a formal CMMS selection and implementation

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process. When this happens, momentum and credibility both take a hit that make subsequent efforts much more difficult. This makes it imperative that processes are seen through to their end.

Formal selection and implementation processes work hand in hand to reduce the redesign, rework, and system customization required after implementation. When the system fits the organization and its objectives closely, few if any system changes will be required. Having fewer system modifications will reduce the potential for errors and problems, which results in a smoother, faster, and less costly project.

Selection and implementation processes focus on the organizational and personnel aspects of a project rather than just the technical requirements. This decreases many common failures by dealing with the root cause at the beginning of the project. Potential failures are revisited at major project milestones. Organizational and personnel driven processes also help achieve buy-in and a wide base of support.

An educated, excited, and committed staff with full management support provides impetus to keep the project on track with goals, timelines, and costs. Access to good information in the CMMS elicits innovative ideas. Continuous improvement gets easier. Barriers between organizations (e.g., operations and maintenance) are eliminated. Cultivating this environment results in true teamwork.

Reviewing, redesigning, and integrating business processes and the software effectively change the way an organization does maintenance. The only way to escape a reactive environment is to conduct preventive maintenance based on asset criticality. A CMMS provides the information required to assess and act in a proactive maintenance environment.

### **Two case studies illustrate these points.**

Organization One followed formalized selection and implementation processes to a degree. When it became apparent that the system lacked needed capabilities and misaligned processes confused users, the organization decided to tailor many screens and add custom programs to provide the missing functionality. As a result, the system required more than four years to implement. When installation of a regular scheduled upgrade was attempted, it was discovered that the organization had made so many changes (including many undocumented customizations) that it could not complete the installation of the upgrade. The organization was locked into the original version of the system.

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Organization Two started its selection process a couple years later. Personnel followed a formalized selection process, reviewed and redesigned maintenance and materials business processes, identified detailed system and functional requirements, had core team and management support, worked with the staff to communicate changes that were coming, and completed a comprehensive implementation plan. Because functional requirements were detailed (including some unique requirements), the selected vendor incorporated the functionality into the system as business rules. Even with the addition of the new business rules and a major new release, this organization was up and running before Organization One. Furthermore, its system was fully supported and upgraded by the vendor.

Why should an organization pay a substantial price for software and then miss out on its benefits? Moving up the ladder of maintenance proficiency toward excellence and world class status requires a fully implemented, fully utilized CMMS. These systems are the springboard to greater efficiency through recurring failure analysis, Reliability Centered Maintenance (RCM), and proactive asset management. The structure and capabilities of a CMMS enable organizations to analyze and manage those assets and provide the care they deserve. **MT**

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*Derold Davis and Joe Mikes are senior consultants at Westin Engineering; (916) 852-2111. They both have more than 15 years of experience in providing system selection and implementation methodologies, proven maintenance practices, productivity improvement practices, and methods and strategies for increasing operational reliability and reducing maintenance overhead.*