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Increasingly, organizations are required to do more with less to stay afloat in today's difficult economy. This places a heavy burden on maintenance personnel. It is imperative that you implement world-class processes that ensure your assets perform efficiently, and that you implement the appropriate computerized maintenance management system (CMMS) or enterprise asset management (EAM) technologies to facilitate those processes. This implementation faces three major challenges:

- Islands and applications. Traditional CMMS/EAM solutions were implemented over long periods of time because of complex data building and architectural requirements. These factors led to multi-year implementations, resulting in many sites having different versions of the same software and leaving people scrambling to meet release dates. Add to that the load required to integrate financials and other systems, and it is no wonder many companies have implemented automated processes but are in no position to take advantage of them across multiple sites.

- Best of breed vs. point solutions. The CMMS/EAM vendors' "features war" of the 1990s led to exciting breakthroughs in technology, but some vendors lost focus with the process. Most software companies jumped a little early on the Internet bandwagon, offering browser-based front ends to their legacy products. While providing a better end user experience, this battle for mind share actually delayed some new projects from getting started, resulting in today's many Web-enabled applications, but few pure Internet applications that can tangibly provide the benefits.
- Mergers and acquisitions. On top of all this, we experienced a merger-mania that seemed to cross all industries. The epidemic of mergers and acquisitions resulted in many companies having multiple systems from competing vendors trying to work together. The situation is so extreme that one large utility has a team of specialists that spend all their time tackling this issue. The recent mergers and attempted takeovers in the CMMS/EAM space provide additional complications. Many companies find themselves yoked to an organization that they did not want or choose. What are they to do?

In order to compete in this environment and maximize your return on assets, you must not only improve your processes but integrate them with other processes throughout your organization. Following are some key guidelines to help you effectively implement process improvement and integration.

Process improvement

The first step in process improvement, as in any complex problem, is to measure. Where are you now? Can you get accurate data across areas of your responsibility for comparison? If not, look at the ways your data is collected and processed and see where the differences are. Simply changing how work is recorded (and at what level) may bridge the gaps between some

systems and locations. If that is not possible, look at your corporate financial system for costs, since most CMMS/EAM systems consolidate transactions there.

Once you have your eye on the key metrics related to costs and performance, chart them. Look at the trends that emerge. Now you can plot trouble areas and build key performance indicators (KPI). These indicators will differ based on what you do and what you track. You will start to see the difference between simple numbers (e.g., how many stock issues were transacted) and the truly valuable ones such as cost of failures and the related downtime.

It is important to be aware of a trend, but can you do anything about it? One of the problems historically with financial reports is that once you get them, it is too late to do anything (the money is spent). Aside from costs, look at your assets and capital equipment. Have you established goals for failures and time to repair? Does your system allow you to record the goal and then track and show you the result? If not, some ad-hoc reporting is in order. This is one area where maintenance can be proactive and respond quickly to emerging trends as they arise.

Regardless of your specialty, most maintenance professionals possess a vast amount of insight. Even before the CMMS/EAM revolution, planners and maintenance personnel knew from experience what equipment would create problems in certain conditions. This experience was acquired over the years and was crucial for successful turnarounds and outages. New systems can link failures to corrective work packages and even schedule work automatically, but fall far short of the kind of knowledge you possess. Moving that information beyond the department, and even the facility, to benefit the entire corporation is vital to true collaboration.

Making information available to people when they need it is the area where technology can help the most. This is also where a pure Internet solution becomes important. Imagine you just received a message asking for some help with a troublesome pump. After looking at the configuration and history, you may be able to point out a few suggestions. With the latest technology, the fact that the request for assistance came from another plant, perhaps half way around the world and in a different language, was transparent to you. You simply responded in your native language and let the system take care of the rest. Languages, local customs, and distances hinder collaboration because of the time required to manage such obstacles. Time is the great equalizer. It is the same the world over, and it is the currency in which we trade.

Process integration

How tasks and information are routed in any system dictates the amount of effort required to maintain it. Older systems require many, many hours of unproductive time manually routing work and information just to keep the system working. Companies do not have the resources today to feed data manually into CMMS/EAM systems to get reports. This data must be transformed automatically into useful information as part of the work execution process.

Much like the way enterprise resource planning (ERP) changed the way buyers work with suppliers, new CMMS/EAM systems will change the way maintenance interacts with the rest of the organization. In the early 1990s, buyers went from local procurement activities to a commodity or a line-of-business approach. By expanding these areas of responsibility, huge savings were generated by leveraging relationships, not transactions. We are poised to make a similar transformation and take our experiences beyond our own organization to benefit the rest of the larger corporation. To make this happen, barriers to this true collaboration must be removed. Technology can play a part, but people will make it happen.

How will this come about? It is simple—evolution.

As we move forward, we evolve. For example, the first preventive maintenance system I ever saw was in the Navy, as a ballistic missile technician in the submarine force. We had one real constant: time. Everything revolved around "time in service" and was replaced on schedule. While I understood the importance of the mission (not to mention keeping the water out of the "people tank"), I always wondered how many good components were thrown out with the bad. This curiosity led many to sample along the way and created the predictive model.

Those philosophies are now simple elements of the reliability centered maintenance (RCM) model, one that looks beyond failures. Looking at an asset's role in the process, and understanding why it fails, is key to the RCM approach. There are new initiatives underway with on-line analytics that will further change how we look at maintenance, but it will always be up to us to understand what planned vs. actual really means, in more than time and money. This constant state of change has a name: continuous improvement.

Commit to continuous improvement

The evolution of maintenance philosophy demands change. As the maintenance business evolves, we are constantly tuning our resources, both internal and external, to meet the challenge. As we move into the 21st century, new partnerships will be forged among manufacturers, suppliers, and users, who will require new collaborative tools that use the Internet to communicate. Just as portals have consolidated access to corporate applications, new CMMS/EAM systems must bring together all the involved parties into the maintenance lifecycle. The Internet is the only way to bring it all together, but without the right processes in

place, it is just glorified e-mail. Your next system must have a way to promote best practices and be able to change as it evolves with your experiences.

The true gift of continuous improvement and the application of best practices is understanding. Knowing failure modes, their root causes, and how to respond will give you insight into the asset you never thought possible. Taking that information out your door to help the broader corporation will be much more valuable, and justify the time and money invested in the tools you use. **MT**

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