Plant Services

The growing value of a CMMS

David Berger, P.Eng., contributing editor, explores how to build the business case for better asset management.

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Now more than ever before, building a business case for upgrading or purchasing a new CMMS has become much easier, or so it should be. With an uncertain economy, rising regulatory pressures, growing global competition and an aging infrastructure, companies are looking to technology and smarter assets to become more competitive. These trends translate into increased value of a CMMS that can be used to maximize asset availability, reliability and performance, while minimizing total cost of ownership for every asset class across your enterprise.

The move to smart assets: One of the most significant trends of the new century is the transformation of physical assets such as plant equipment, facilities and vehicles, to smart assets. By adding a computer chip, RFID tag, GPS device or a sophisticated onboard computer, assets can be monitored and tracked from virtually anywhere. The digitization of assets has increased their value to the organization, and in turn, the need to better maintain them using tools such as the CMMS.

But with the proliferation of smart assets comes increased cost and complexity, as well as the need for greater integration. This adds tremendous strength to the business case for upgrading or implementing a new CMMS capable of better integrating the many silos of technology and lowering your asset lifecycle costs. In some cases, smart assets have become mission-critical, such as automated safety systems, thereby increasing our reliance on tools such as the CMMS to minimize catastrophic failure.

The rising importance of sustainability: Another changing dynamic resulting from smarter assets is the increase in energy consumption experienced worldwide. For example, depending on whose survey results you believe, data center costs are at least two to three times what they were five years ago due to increased computerization. This is despite advances made by computer manufacturers with green technology that consumes less energy.

> **"Companies have seen productivity gains of 5% to 30%."**
>
> *– David Berger, P.Eng.*

Rising energy consumption and associated costs threaten our environmental sustainability. Modern CMMS packages can play a huge role in monitoring energy consumption of assets to ensure costs are properly managed. The following CMMS features can assist in identifying opportunities to reduce your energy footprint:

- Condition-based monitoring to track energy consumption for a given asset, including user-definable upper and lower control limits, trend analysis and the triggering of preventive maintenance work orders when energy consumption meets established condition criteria.

- Ability to correlate energy consumption with variables such as environmental conditions, operational output, equipment manufacturer, age of equipment, PM history and so on, in order to determine factors that minimize energy consumption.
- Repair/replace and lifecycle management decision-making that incorporates energy consumption (e.g., determining if it is cost-effective to replace an asset with a new one that consumes less energy).

The emphasis on measurement: Another factor driving companies to upgrade or buy a new CMMS is the increased focus on measurement. Shareholders are looking for more detailed information about a company before investing. Consumers are becoming more concerned about the company that manufactures and sells a given product. Senior managers have an insatiable desire to measure and benchmark against their competitors. These and other pressures to get better at measurement have resulted in improvements to the CMMS such as:

- Predefined key performance indicators such as PM compliance, mean-time-between-failure and asset availability.
- Business intelligence including dashboards, graphics, standard reports and queries, etc.
- Balanced scorecard capability.
- Data analysis and decision-support tools, e.g. Pareto analysis to identify recurring problems, root cause analysis and lifecycle analysis.

Increased regulatory pressures: Regulators have intensified their demand for better controls and detailed reporting from companies to protect employees and the public from the catastrophic failure of assets. CMMS vendors have reacted with an ever-increasing array of features and functions that help satisfy the needs of regulatory bodies from every industry. These include:

- Flexible reporting tools that allow users to easily create reports in a format and level of detail suitable to relevant regulatory requirements.
- Advanced approval capability to ensure adequate control over expenditures, work initiation, deferral of work orders, re-opening a closed work order, configuration of the CMMS, etc.
- Security features such as log-in password, digital signatures and read/write access down to the field level for roles or individual users
- Error-checking capability for format, range and logic (e.g., preventing a planner from reserving an undersized part for a given asset).
- An audit trail function that records all changes to the database (e.g., changing key data in the equipment, parts, vendor or employee master file).
- Sophisticated notification and alarming capability that alerts the appropriate user or manager when a user-defined condition is met, such as a process is out of control, a PM is long overdue or suspicious data has been entered.

Greater savings and benefits: Another reason why the value of a new or upgraded CMMS has been growing is that the potential savings and benefits have become more substantial for many companies. That value stems from moving to a modern, more automated CMMS. For example, companies have seen productivity gains of 5% to 30% when deploying handheld mobile devices for maintainers to download their work orders, input parts and labor, view equipment history and diagnostic data, refer to a graphic parts book or map, scan a barcode label and other useful functions.

Modern CMMS packages have sophisticated features that assist in moving your company to a more planned environment. These include condition-based monitoring functionality, strategic and long-term

planning capability, reliability-centered maintenance features and root cause analysis for identifying and minimizing expensive repeat failures. Unplanned work can cost anywhere from 1.5 to 3 times more than properly planned work, so companies currently saddled with a fire-fighting mentality can achieve significant savings.

The strength of your business case will depend on when you last replaced your current version of CMMS. Typically, the longer it has been, the better the payback, especially if your starting point is a manual or semi-automated system. The potential benefits vary for differing industries, size, product mix, asset classes, etc. Here are typical ranges of percent improvement potential for automating processes and moving to a more planned environment, based on my experience:

- Asset availability 1% to 10%
- Asset utilization up to 15% (zero if 7/24 operation)
- Asset performance up to 5%
- Quality of output up to 5%
- Asset reliability 3% to 5%
- Total cost of ownership 5% to 20%
- Wrench time 5% to 30%
- Labor productivity 10% to 30%
- Capital asset replacements 3% to 5% reduction
- Warranty recoveries 10% to 50%
- Spare parts inventory levels 10% to 30% reduction
- Spare parts inventory stockouts 5% to 10% reduction
- Number of rush and expedited orders 3% to 15% reduction

Improved affordability: With increased competition in the CMMS vendor world and a maturing of the industry come more favorable pricing opportunities. As well, there are far more pricing options, such as a variety of hosted solutions, and the rising popularity of Software as a Service (SaaS), allowing companies to pay as you go without up-front charges. You can even find fairly sophisticated software for less than $1,000. Be forewarned, however, implementation costs are rarely cheap if you want experienced help — and you will want experienced help to modify your processes, properly configure the CMMS in support of processes and ultimately realize the benefits described above.

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