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Improving the organization of the physical asset management function to make it more influential and more effective.

Although the details of physical asset management, financial asset management, and human asset (resources) management are quite different, they share common elements directed toward supporting the value chain of the enterprise.

As noted in "Part I: The Asset Management Model," these support functions entail setting procedures to be followed with respect to the assets used by managers of the value chain, ensuring that the procedures are followed, and keeping score. They include the acquisition and deployment of additional assets when required. Given the similarities of these tasks in each function, one would think that the physical asset management organization would be similar to the others: small, focused and tightly organized, and influential.

In reality, this is seldom the case. The physical asset management function is usually much larger than the other two, much more diffuse, much less focused, and not nearly as influential. All of which means that it is also much less effective.

In the opinion of the author, the single most important reason for the differences in organization, influence, and effectiveness between the physical asset management function and the other two is that more often than not it is responsible for executing maintenance tasks in addition to deciding what tasks should be done. This adds an enormous—in fact, a crippling—additional day-to-day management burden compared to the other two support functions.

It really does matter

At this point, it is worth pausing to ask whether it matters to any organization if the physical asset support function becomes weak, unfocused, and demoralized to the extent that its effectiveness is impaired. To answer this question, let us compare the consequences of inadequate support from each of the three main support functions.

If the finance department does not do its job properly, the worst that could happen is that the organization goes bankrupt. In extreme cases, senior executives could face lawsuits from irate shareholders.

If the human resources department does not do its job properly, the ability and/or willingness of the workforce at all levels to do their jobs begins to deteriorate. This leads to an overall decline in business performance and may cause an increase in human errors with safety consequences. (However, in the case of the latter, the cause and effect relationship is usually difficult to prove in a legal sense.) In extreme cases, poor human resource management results in actions such as strikes or sabotage that could threaten the survival of the business. In short, the consequences of poor human resource management are nearly all economic, but there are some safety overtones.

In the world of physical asset management, inappropriate design and/or maintenance leads to increases in failure rates and downtime that also erode business effectiveness. In modern, highly automated businesses, the performance of physical assets has an impact on business performance that is at least as great as and often greater than the performance of people. Not only that, but many equipment failures have direct, lethal consequences in a world that is starting to hold individual managers personally accountable for such failures, to an extent that can result in heavy fines and extensive jail sentences.

So it could be argued that physical assets are not only at least as important as the other types of assets in business terms, but from the viewpoint of the accountability of individual executives in the case of certain types of failures, they are actually far more important. They need to be managed accordingly.

If the physical asset management function is to become as influential and effective as it could and should be, a number of key changes need to be made. The most important of these are outlined in the following paragraphs.

Separate the referees from the players

Both the financial and the human resource functions separate the policy formulation process (writing the rules of the game) from the execution of the associated tasks (playing the game). At the strategic level, this is perhaps the single most important step that the physical asset management function should take to solve the organizational problems outlined in the first part of this article.

In essence, this means that the execution of all maintenance tasks—whether preventive, predictive, corrective, or detective—should be made the responsibility of the business units that operate or use the assets. The physical asset management function should be responsible for

selecting the tasks (content and frequency), without being responsible for their execution.

Combine engineering and maintenance

In cases where they are separated, the engineering and maintenance functions should be combined into one physical asset management function.

Make sure the physical asset management rules are right

Part 1 of this article mentioned that many operations people are still highly skeptical about the value of preventive maintenance activities because of problems associated with excessive reliance on inappropriate fixed-interval maintenance in the past. It also mentioned that some maintenance departments are trying to compensate by swinging too heavily toward predictive or condition-based maintenance. In fact, the real answer is to recognize that all types of asset management policies have a place, and to select the policy that is most appropriate for dealing with each type of failure.

Not only must these policies ensure that each asset continues to make a safe and cost-effective contribution to the value-adding process, but they also must be legally defensible.

To address this issue, many formal physical asset management strategy formulation processes have been developed over the past 20 years. The best of these—most notably those that comply with "Evaluation Criteria for Reliability-Centered Maintenance" (SAE Standard JA1011)—not only lead to rapid and substantial improvements in equipment reliability, safety, and environmental integrity, but also provide a solid basis for defending the maintenance programs in a court of law if this should become necessary.

It is essential that anyone who takes the lead in applying these processes should receive formal, competency-based training before attempting to do so. (It is not sufficient to try to lead the application of these processes after simply reading a book or attending a short course.)

Applying these processes correctly is likely to do more than any other single action to restore the long-term technical credibility of the maintenance function.

Avoid shortcuts

The application of rigorous asset management strategy formulation processes takes time and costs money, but the financial returns are such that they usually pay for themselves in a matter of months, if not weeks. This is a very rapid payback indeed.

Despite this rapid payback, some individuals and organizations have tended to focus on the effort rather than the returns, which has led them to spend a great deal of energy trying to reduce the time and resources needed to apply these processes. The results of these attempts are generally known as streamlined techniques. Some of them even generate fairly significant short-term gains.

However, in the experience of the author, the omissions embodied in these streamlined techniques result in maintenance programs which contain so many flaws that in the long term, the performance of equipment to which they are applied will not match that of equipment subjected to correctly developed programs. This means that the credibility (and hence the stature) of the maintenance people who employ these streamlined techniques will not improve, but is likely to suffer further. Clearly, the only way to avoid this fate is to avoid shortcuts.

Ensure that the players understand the rules

The managers of business units that take responsibility for executing maintenance tasks must have a basic understanding of the principles underlying the task selection process, and need to understand fully the risks that they, their colleagues, and the business as a whole face if the tasks are not done correctly. They also should clearly understand and be able to make effective use of whatever planning, scheduling, and reporting procedures are in place to help ensure that the tasks are done at the right time and by the right people.

In the case of modern, highly automated value-adding processes, the impact of technology is reaching the point that a substantial technical qualification—ideally a degree in engineering—is becoming a necessity for the managers of the relevant business units. This should be supplemented by intensive formal training in modern asset management processes. This is a critical success factor because many organizations already have tried unsuccessfully to make maintenance task execution the responsibility of business unit managers. Mounting anecdotal evidence is suggesting that one of the main reasons why these attempts fail is lack of appropriate training for the managers in the field.

The people who actually do the work (operators and maintainers) also need a basic

understanding of the task selection process, and they need to be trained to do the tasks properly. Their inclination to "do the right job right" every time will be greatly enhanced if they play a part in the task selection process.

Ensure that the rules are obeyed

Procedures should be in place to ensure that all maintenance tasks are done at the right time and by the right people. This needs suitable planning and scheduling systems, and much more needs to be done about the question of compliance.

In most industries right now, poor maintenance schedule compliance attracts little more than periodic exhortations to try to do better. In fact, given what is at stake, the penalties for noncompliance with the rules of physical asset management should be at least as severe as those that apply if anyone breaches the rules governing the management of financial assets or human resources. (Think about what usually happens to managers who chronically exceed the controllable portions of their expense budgets, or what happens to a manager who loses his temper and hits a subordinate.)

Of course, organizations will only accept a similar degree of discipline in the world of physical assets if they have commensurate faith in the value and the validity of the tasks. This places even greater onus on physical asset managers to ensure that the correct tasks are specified, and leaves even less room for shortcuts.

Spend what needs to be spent

The worldwide pressure to reduce maintenance costs leads many maintenance managers to complain that they are not given the resources needed to apply rigorous maintenance policy formulation processes. One also frequently hears complaints that insufficient resources are provided to deal with existing maintenance workloads, let alone to analyze what the organizations concerned should really be doing.

Rigorous analysis reveals that there is a certain safe minimum of maintenance that needs to be done on every plant asset. (Sometimes it transpires that this safe minimum is zero, but that finding should be substantiated by rigorous analysis.) Doing less than the safe minimum increases the risk of injuries or fatalities, usually to an extent that is indefensible in a court of law. Bear in mind that in the present legislative climate, the people who establish maintenance policies and the people who manage the execution of the work are increasingly likely to be held every bit as accountable for such accidents as the people who perform the work.

All this means that the time has come for maintenance people to insist that sufficient resources are made available to determine what the safe minimum of maintenance work actually is, and that the resources required to perform the safe minimum are made available. However, they can do this credibly only if the people providing the funds have complete confidence in the technical validity of the process used to establish the safe minimum—yet another reason why there is no room for shortcuts.

Maintenance information systems

Just about every maintenance organization that is likely to need a computerized maintenance management system (CMMS) or enterprise asset management (EAM) system already has one, so the need for and capabilities of such systems are already well established. The only question that sometimes remains is whether the systems should be under the control of a centralized physical asset management department or whether they should be under the control of field maintenance people in the business units.

The other two asset management functions tend to control the specification, installation, and operation of the computer systems used to manage their assets, so it makes sense that the physical asset management function should do likewise. The field people should simply have access to the systems to help them plan their work on a day-to-day basis and to feed back data as required.

Outsourcing

Two distinct aspects of maintenance are frequently outsourced. One is the execution of tasks, and the other is the formulation of maintenance strategy (specifically the application of processes such as reliability-centered maintenance).

Task execution is sometimes split into two further categories: major projects such as shutdowns and turnarounds which are very often outsourced, and day-to-day maintenance which is frequently done by in-house personnel. If any or all task execution is to be outsourced, it is essential that the scope of the work to be done by the contractors is defined as precisely as possible before any contracts are let. In other words, such contracts should be let only after the maintenance policies that apply to the assets concerned have been identified in detail.

Maintenance strategy formulation, on the other hand, should not be outsourced. In the opinion

of the author, asking contractors to develop maintenance programs is like asking a raw material supplier or some other outsider to set a company's expenditure budgets, or asking a trade union leader to negotiate a union agreement on behalf of the employer. Far from being outsourced, the physical asset management strategy formulation process should be seen as a function—arguably the most important function—of the in-house physical asset management department.

21st century physical asset management organization

To summarize: physical asset management in the 21st century should be separated into two distinct functions (see the accompanying chart " 21st Century Enterprise Organization "):

- The first function should be a centralized physical asset management department, with the duties and responsibilities similar to those outlined in the table in the first part of this article (available on the Internet at). The overall head of this department should report to the chief executive of the enterprise that makes use of the assets.
- The second function should be fulfilled by field supervisors responsible for organizing maintenance tasks on a day-to-day basis (with the assistance of field planners as necessary), and for ensuring that the work is done as planned to the required standard. The maintainers who wield the wrenches and the operators who push the buttons and pull the levers should report to these field supervisors, not to the head of the physical asset management department.

The present organization of physical asset management in most undertakings is such that years—if not decades—are likely to elapse before these proposals can be fully implemented, for two reasons. First, the magnitude of the changes will often provoke massive resistance from all sorts of people who are comfortable with the status quo. Second, at this point in time and in most organizations, the maintenance function has an immense amount to do to re-establish its technical credibility.

However, given the scale of the contribution that safe, stable, and reliable physical assets make to the value-adding process, the companies that get there soonest will enjoy an overwhelming competitive advantage, especially in highly automated industries. The time to start the journey is now. **MT**

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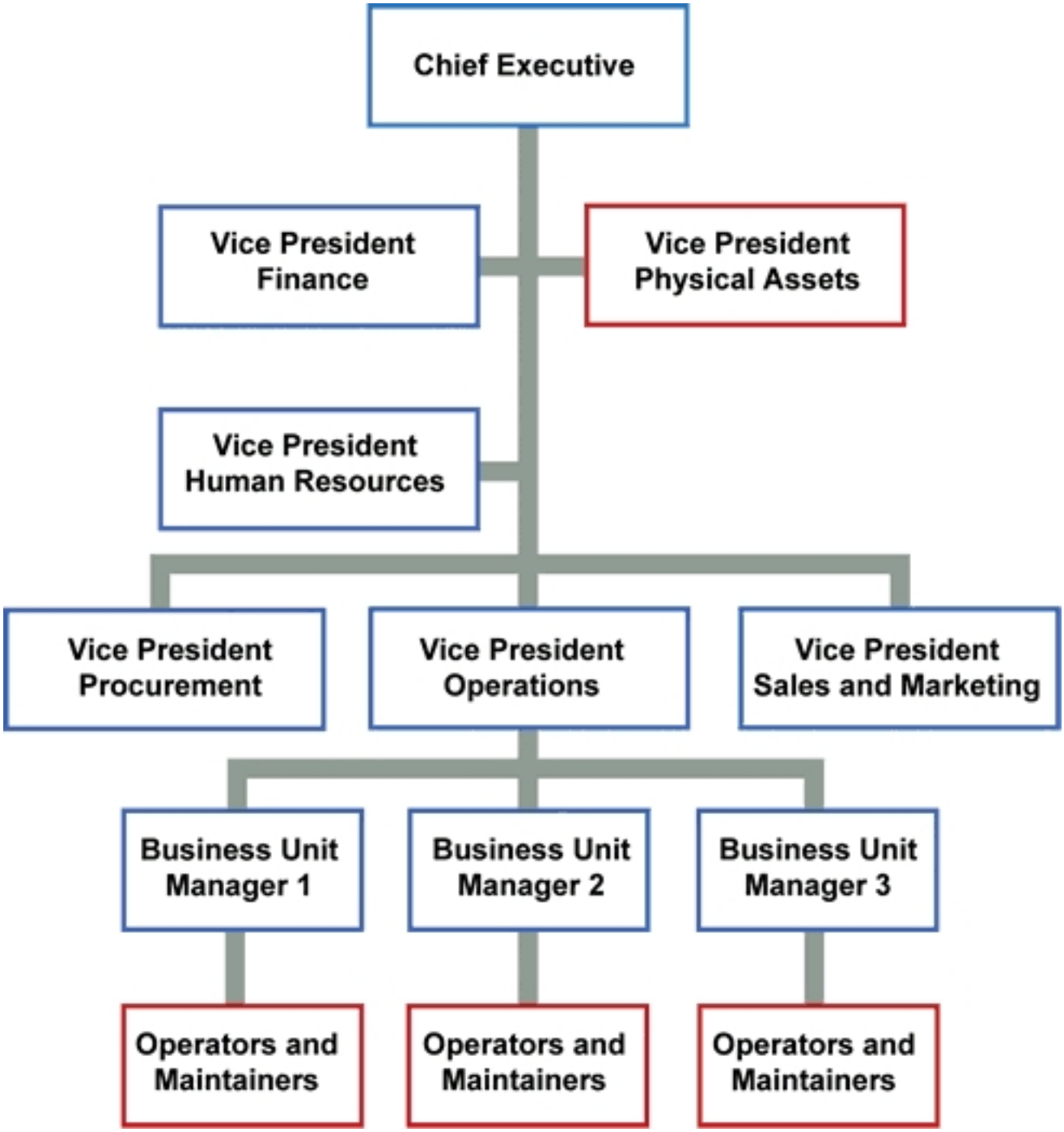
21st Century Enterprise Organization



Physical asset management can be divided into two functions: strategy and management

at the
vice president level and task execution in the business unit.

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