

QUALITY TOOLBOX

Is Your Integrated Management System Really Integrated?

In response to customer requirements and other pressures imposed by both regulators and the marketplace, organizations now find themselves having to conform to a bewildering number of management standards.

One of the first major international standards to come on the scene was ISO 9001 (quality management). It was followed by ISO 14001 (environmental management). Now there are standards for occupational health and safety (OHSAS 18001), financial management (Sarbanes-Oxley Section 404), risk management (AS 4360), social responsibility (SA 8000), sustainable development (BS 8900), food safety management (ISO 22000), information security management (ISO 27001), information technology service management (ISO 20000), and business excellence (the Baldrige model).

In addition, several industries have created their own individual management standards:

- Chemicals (RC 14001 and the Responsible Care Management System)
- Automotive (ISO/TS 16949)
- Aerospace (AS 9100)
- Medical devices (ISO 13485)
- Telecommunications (TL 9000)
- Testing and calibration laboratories (ISO/IEC 17025)

Many of the industry-specific standards target quality management.

Organizations frequently are required to comply with more than one of these standards—often

three or more. As a result, each department within the organization may have to address multiple requirements deriving from several different management standards.

This column discusses some attempts being made to integrate management standards and find the elusive “business management system” that can serve as a common denominator for integrating all management standards within an organization. I also offer some ideas for developing a more focused integration approach that goes beyond most current efforts.

Simplifying the Maze

Given the proliferation of management standards, it is easy to see why organizational managers may begin to question the need for them: “Why are we using these systems?” “What value are they to us?”

Despite these doubts, however, organizations often have little choice but to implement multiple management systems. In many cases, they are required to do so by customers, trade associations, or other stakeholders. So management decides, “Let’s implement a barely conforming system and try to cut our losses.”

There’s a better way to approach the challenge of dealing with multiple management standards, however. Organizations can avoid confusion and minimize expense by integrating the various standards.

Robert B. Pojasek



Since separate stand-alone management systems cost more to implement and comply with, integration should help increase operational efficiency and ultimately save money for organizations. In this context, it is interesting to note that ISO 9001:2000 actually addresses the determination of just how much value is added to the organization by utilizing the standard.

Quest for the “Business Management System”

There has long been a search for the “holy grail” of management systems: the fully integrated “business management system” (or “umbrella system”) that can link all the management standards and systems used by the organization.

For most organizations, the path to finding this overarching business management system starts with integrating the management standards covering quality (ISO 9001), environment (ISO 14001), and occupational health and safety (OHSAS 18001).

Such a system would enable the organization to ensure the quality of its products and services and demonstrate that those products and services are consistent

with the organization’s vision, mission, core values, and objectives.

Integrating Quality, Environmental, and Occupational Health and Safety Standards

For most organizations, the path to finding this overarching business management system starts with integrating the management standards covering quality (ISO 9001), environment (ISO 14001), and occupational health and safety (OHSAS 18001).

ISO 14001 and OHSAS 18001 are both based on the “Plan, Do, Check, Act” (PDCA) cycle. This is an important point, since presumably organizations find it relatively easy to integrate multiple PDCA-based management standards.

Adding ISO 9001 to the integrated structure may be a bit more challenging. This standard incorporates the PDCA cycle but is based on a process-focus and systems approach.

Integrated or Combined?

Before going further, it is useful to understand what is generally meant by the term *integration* as it relates to management standards.

Dictionaries often define the word “integrate” as “to combine.” And, indeed, many attempts to integrate management standards simply combine elements from various systems and define the outcome as being “integrated.”

The British Standards Institute defines a progression from “combined” to “integrated” as follows:

- *Step 1—Combined:* Separate management systems are being used at the same time in the same organization.
- *Step 2—Integratable:* Common elements in the management systems have been identified.
- *Step 3—Integrating:* Common elements have been identified and are being integrated (i.e., combined).
- *Step 4—Integrated:* There is one system incorporating all “common” elements.

This “combination” strategy is embedded in the key primary standards. For example, Annex B of ISO 14001 includes a table that describes correspondences between ISO 9001:2000 and ISO 14001:2004. Table A.1 of OHSAS 18001 shows the correspondence between OHSAS 18001:1999, ISO 14001:1996 (an older version of ISO 14001), and ISO 9001:2000.

These tables make it all look so easy. Just line up the common elements to create an integrated system! The problem is that no one seems to be worrying about the elements that are *not* common to all the standards.

Combining Management Standards

Despite its limitations, the “combination” approach is valuable. Combining common elements can save money, since it costs organizations more to implement and comply with multiple stand-alone standards.

Using Common Software

With a combined approach, for example, all documents can be maintained and controlled using common software, such as Microsoft Windows SharePoint. This software allows documents to be accessed by staff members who work in different functional areas within the organization (such as the quality, environmental, and occupational health and safety programs).

Specialized software also provides mechanisms that enable management representatives to give their final approvals to changes in documented procedures before the changes are formally implemented.

Combining Management Reviews

Most management standards require periodic reviews by management. These management reviews can be made less costly and cumbersome when they are combined with other regular business reviews that are already being conducted by management.

It is not necessary to hold special management review meetings for each separate management standard. The organization just needs to ensure that it conducts management reviews at the appropriate intervals, while maintaining proper records for each management standard issue that is covered.

Several specialized meetings can be combined into one business review meeting. In fact, holding a combined meeting not only saves money, but also offers other potential advantages. In particular, it can give managers an opportunity to see how the various management standards in-

teract, and allow them to incorporate action items from several standards into one overall action plan that addresses multiple problems.

Management will be able to see more clearly how issues overlap. They will find that, for instance, some occupational health and safety projects may involve environmental issues—and vice versa. As a result of these combined meetings, the “programs” for each management standard will begin moving toward integration.

Combining Audits

Organizations that combine internal and external audits can realize significant cost savings (often 33 percent or more). This can translate into savings of over \$10,000 per year for a medium-sized manufacturing operation (based on fully burdened hourly rates for internal auditors and travel and hourly labor costs for external auditors).

However, an organization cannot conduct a combined audit on management systems unless it has achieved at least the beginning stages of integration. The savings occur when the auditor needs to consider only one audit sample (whether it’s for management review, document review, or training and communication).

Beyond System Combination: Achieving Genuine Integration

The “combination” approach to integrated management systems is quite popular with the people who manage and independently register the various standard-based systems. It also is convenient for key participants who must maintain the formerly independent programs.

As valuable as the “combined” approach is, however, it does not go far enough. Genuine in-

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tegration involves more than just lining up the requirements of multiple standards and combining them. So how can organizations push the integration process further?

Getting the Perspective Right

The key to *true* integration of management systems is surprisingly simple: The focus of the management system should not be on the functional managers, but rather on the employees who actually produce the product or offer the service that “pays the bills” within the organization. See **Exhibit 1**.

Integration of management system components is facilitated when employees who work with the organization’s product- and service-realization processes (as defined in ISO 9001) take direct responsibility for quality, environment, and occupational health and safety issues. In addition, integrating management programs at the employee level can reduce the confusion that workers so often face when they are expected to conform to multiple standards.

The management representatives assigned to oversee each management standard can support

workers’ efforts by acting as contacts and information sources for the employees. They can provide assistance and seek ways to improve employees’ training and level of knowledge.

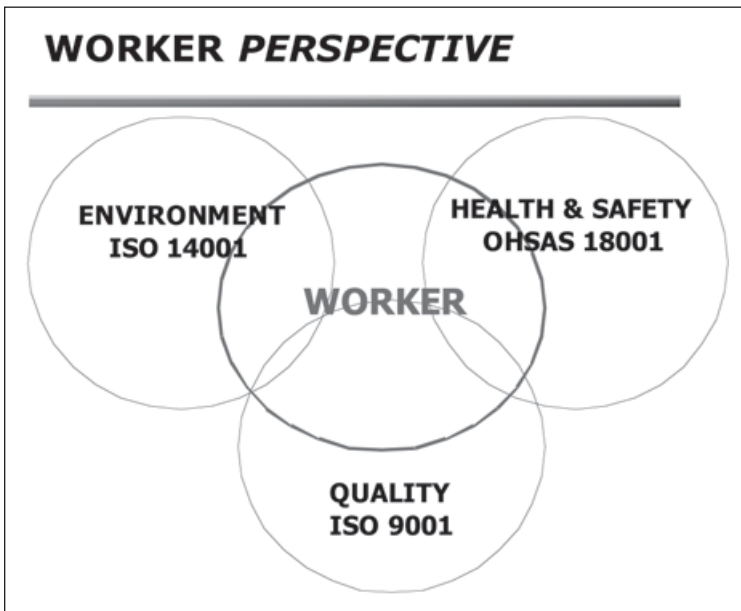
The process quickly becomes a two-way street, since lessons learned by employees can also help improve the organization’s overall quality, environment, and occupational health and safety management programs.

Example: Work Areas as Sampling Points

Here’s an example of how the employee-focused approach can work: It is possible to have an employee’s work area function as a sampling point. The actual quality, water, or air sample will be taken by a trained technician. However, the employee will become familiar with the sampling process, will know the usual frequency of sampling, and will understand the reason that the sample is being taken.

If by chance the technician does not show up at the proper sampling interval, the employee could report this to a supervisor or ask why the sample has not been taken. This is a very simple way to get the employee involved in the integrated management program.

Exhibit 1. System Integration from the Employee Point of View



Employee Training and SOPs

As part of the integration process, it is important to focus employees’ training on what they must do to support the integrated management system. Training that is not centered on workers’ daily activities generally will not help them understand their specific roles in the implementation of the integrated system.

The organization should define the quality, environmental, and occupational health and safety roles that individual workers play, and then embed information that supports these specific roles into employees’ standard operating procedures (SOPs).

Such a system makes integration both more workable for employees themselves and more

straightforward for auditors. When an auditor asks the employee what he or she is doing to support the integrated management system, the employee will be able to refer the auditor to the specific SOP on which they have been trained.

This system will work for supporting processes, as well as for the organization's main operations. With the use of hierarchical process mapping (discussed below), it becomes possible to provide work area-specific quality, environmental, and occupational health and safety information to the workers who support the main processes, such as maintenance and emergency-response personnel.

Corrective Action Planning

The integrated management system should include a comprehensive corrective action program that can deal with the full range of problems that might arise under any of the management systems being used by the organization. The corrective action program should be able to respond when a customer complaint arises (under ISO 9001), when a process-related problem creates environmental issues (ISO 14000), or when occupational health and safety concerns surface (OHSAS 18001).

As noted below, the best way to approach problems is to analyze their root causes. Workers should be directly involved in the root-cause analysis process, because successful corrective action plans require specific input from the workers who will be involved in carrying them out. Too often, corrective action plans are devised by cross-functional teams, and employees are simply told what to do.

Management Effectiveness

Managers will be better informed about the requirements of the integrated management system if they can view those requirements according to the work areas that have responsibility for them. With this perspective, managers will be

able to actually use information in an integrated fashion, instead of having to memorize the components of each major management system.

The Path to Integration

Management systems will remain separate (or only loosely combined) until employees and their supervisors begin to take part in planning and implementing genuinely integrated systems.

Business excellence models make it very clear that simply telling an employee what to do is never as effective as involving the employee directly. By engaging workers—and focusing management system integration on the employee perspective—organizational managers can help ensure that employees will take responsibility for those elements of the integrated system that affect their work.

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Using Systems Approach Tools to Facilitate Integration

The management standards for quality (ISO 9001), environmental management (ISO 14001), and occupational health and safety (OHSAS 18001) are all written in a nonprescriptive fashion. They do not dictate how organizations should implement the standards, nor do they specify what tools should be used to achieve implementation.

I have found two sets of tools to be quite useful in providing a solid foundation for integrated management systems: hierarchical process mapping and creation of employee action plans.

Hierarchical Process Mapping

Long-time readers of this column are already familiar with hierarchical process mapping, which I have discussed in detail previously.¹

A hierarchical process map uses simple process-flow, diagram-style graphics to visually represent the work steps involved in a process. The work depicted can be an operational process (such as one that creates a product or service) or some other business process. A process map presents work activities in a top-to-bottom structure or “hierarchy.” The map’s diagrams depict the process in more detail as you descend through its levels.

Hierarchical process mapping typically involves significant input from workers. In addition, once preliminary process maps are prepared, they are verified by sharing them with employees

who perform the work tasks represented by the maps.

Hierarchical process maps allow every employee involved in the main product- or service-realization process to have a complete view of their work activities.

The hierarchical process mapping tool allows an organization to establish a common foundation for an integrated management

system; it provides both the “process focus” and the “systems approach” that are specified in ISO 9001:2000.

Benefits of Hierarchical Process Mapping

Hierarchical process maps allow every employee involved in the main product- or service-realization process to have a complete view of their work activities. Employees can also see the work steps involved in areas upstream of their responsibility (i.e., their internal suppliers) and in areas immediately downstream of their responsibility (i.e., their internal customers).

Information on all business process activities (including purchasing, human resources, accounting, maintenance, quality, environment, occupational health and safety, and operations) can be linked to the maps and to employee work areas. Employees thus become familiar with all

the resources that are being used and lost in their operating procedures.

It is also very helpful when specific work areas are provided with links to information about relevant legal and other requirements (e.g., customer specifications and stakeholder interests). These requirements should be clearly assigned to the work areas that have specific compliance responsibilities associated with them.

Facilitating ISO 9001 Implementation

With hierarchical process mapping, operational issues affecting product quality can be tracked to specific work areas. When there is a customer complaint, the issue can be addressed through root-cause analysis and traced back to the work areas that are most likely to have caused the problem.

Facilitating ISO 14001 Implementation

With the information they obtain from utilizing the hierarchical process-mapping tool, employees have a much better understanding of how their particular activities contribute to the organization’s “environmental aspects.” Defining and managing these aspects are key requirements of ISO 14001.

Facilitating OHSAS 18001 Implementation

Employees in each work area are exposed to particular occupational hazards, as defined in OHSAS 18001. In addition, persons other than employees (for instance, contractors and visitors) can also be exposed to these hazards. Like environmental aspects, occupational hazards can occur not only during normal operations, but also during start-ups, shutdowns, emergency conditions, and maintenance activities.

The information and perspective that employees gain from hierarchical process mapping allows them to appreciate (and better manage) the occupational hazards associated with their work areas.

Why Hierarchical Process Mapping?

Facilities often assume that hierarchical process mapping is not necessary since they already use other methods to identify issues and problems. For example, ISO 14001 and OHSAS 18001 implementation efforts often rely on “walk throughs” and brainstorming sessions with select teams of knowledgeable people in order to locate environmental aspects and occupational hazards.

Unfortunately, this strategy can fail to spot many problem areas. It often excludes supporting processes, especially pollution control equipment—a serious omission since these pieces of equipment involve their own environmental aspects and hazards, in addition to acting as physical controls for the main processes.

Hierarchical process mapping is more thorough than “walk throughs” or brainstorming sessions. It also involves all relevant workers, especially during the verification step.

With the mapping tool, all information associated with each work area can be linked using a program such as MS Excel or MS Access. Links can be provided to information stored on the organization’s intranet site or on its internal hard drives. All information on processes can be made accessible to employees, contractors, managers, and auditors.

Hierarchical process mapping creates a solid foundation for an integrated management system. Such a system must be able to respond to audit questions such as the following:

- Was the evaluation of potential customer requirements, environmental aspects, and occupational health and safety hazards comprehensive?
- Were the reviews thorough?
- How was the significance of these items determined?
- How is information maintained and kept up-to-date?

- How are prevention and operational controls determined and implemented?
- Are the legal requirements listed comprehensive and complete?
- Is the listing sufficiently detailed by work area?
- Is there evidence that the organization is evaluating its compliance with regulatory and other requirements and that this is effectively communicated to employees?
- Were weaknesses identified in the compliance review acted on?

Creating Employee Action Plans

In most organizations, the “program” section of each of the management systems highlighted here (ISO 9001, ISO 14001, and OHSAS 18001) consists of a set of management directives telling employees what to do. Organizations that are working to integrate these systems should use the integration process as an opportunity to increase worker involvement in creating plans of action.

Instead of simply combining existing management directives, employees themselves can create integrated action plans. This can be accomplished effectively by using “Systems Approach for Process Improvement” tools, as discussed below.

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Key Tools for Action Planning

Once targets are set by management, employee teams can be assigned to each target. In an integrated management system, the targets can (and should) be integrated—that is, they should involve issues from multiple management systems as they relate to a common work area.

The employee teams should work with a facilitator, using the Systems Approach quality man-

agement tools to create draft action plans. These quality management tools include (but are not limited to):

- creating a common statement of the problem, analyzing root causes of the problem,
- finding alternative solutions through brain-writing,
- prioritizing alternative solutions through “bubble sorting,” and
- preparing draft action plans to implement the chosen solutions.

More details on the use of these tools can be found in a previous column.²

Developing the Action Plans

Organizations should keep a few basic principles in mind when developing employee action plans:

- Those who conduct root-cause analysis of problems should understand the tasks of the employees who operate the main processes involved. They should also have information on all relevant supporting processes.

- All employee work projects included within a draft action plan should be designed to ensure that the benefits derived from the project exceed the costs of obtaining those benefits.
- As part of action planning, employees should set “performance objectives” for each of their work tasks. The sum of these performance objectives can be used as integrated management system objectives.
- Each action plan should specify responsibilities, time frames, and resources required.
- Similar action plans can be created for corrective and preventive actions.
- Draft action plans should be submitted for management review. Managers typically like these plans because they clearly define many issues and activities that are important to the success of the organization’s programs. Action plans make the management review process so much simpler!

Redefining Integrated Management Systems

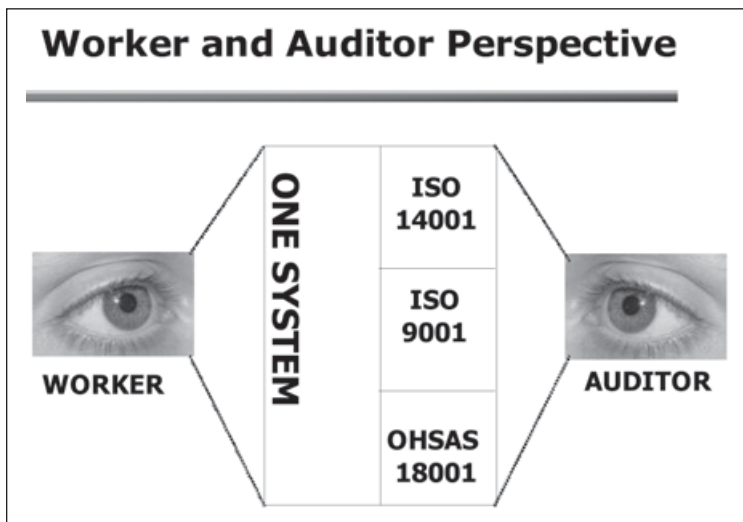
Now that I have outlined an alternative approach to integration, I’d like to redefine the term *integrated management system* as it relates to the three major standards discussed here (ISO 9001, ISO 14001, and OHSAS 18001). A genuinely integrated system is one that combines these three management systems using an employee focus, a process view, and a systems approach.

This approach to integration makes it possible to put all relevant management standard practices into a single system. No longer will the organization need to have separate components for different management standards.

Moreover, each employee will have a set of tools that allows them to work within a single integrated management system. Despite the multiple standards involved, employees will “see” only one system.

The system is now “integrated” in two key senses. It is truly integrated as a management sys-

Exhibit 2. System Integration from the Employee and Auditor Points of View



tem, and it is fully integrated into the organization's business operations. It is beginning to look like the much sought after "business management system."

Of course, issues may still arise with third-party auditors and registrars. Certainly, they will want to see the spreadsheets and other supporting data that the organization has created as part of the integration process. And they will need to understand clearly how all three separate standards are accounted for in one integrated management system (see **Exhibit 2**). Fortunately, more registrars now seem willing to conduct combined (and even integrated) audits.

Concluding Thoughts

The path to creating an integrated business management system is starting to become more definable. The logical next step will be to incorporate business excellence criteria (such as the Baldrige model). This will take us even further along the road toward truly integrated management systems.

Notes

1. See Pojasek, R. B. (2005). Quality toolbox: Understanding processes with hierarchical process mapping. *Environmental Quality Management*, 15(2), 79–86.
2. See Pojasek, R. B. (2005). Quality toolbox: Improving processes: The traditional approach versus the systems approach. *Environmental Quality Management*, 15(1), 91–100.

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