

Integrated Management Systems

Leading Strategies and Solutions

Wayne Pardy and Terri Andrews



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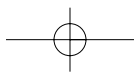
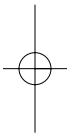
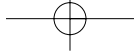
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This book is dedicated to our two-legged children, Beth and Mark; our four-legged children, Colby, Louie, Eddie, and Koko; and our angel children, Cody and Sophie.

It's also dedicated to our moms, Nora and Jean. And to our fathers, Chrissy and Garland, who we know would be very proud if they were here.



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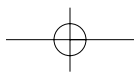
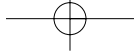
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INTRODUCTION

The purpose of an integrated management system is to help provide a clear representation of all the features of your respective management system pieces, to show how they impact and complement one other, and to demonstrate how their relationship assists in managing the respective management systems risks of the organization.

Of course, one of the principle objectives is to help ensure synergy and to provide for less duplication and more rationalization of common approaches, ideas, and tools.

The global realities of today's business environment are forcing many individuals and organizations to change and adapt, and quickly. There is no longer the luxury of studying, hedging, and waiting until things "return to normal." Normal will be determined by those who have the foresight and vision to take control of the present to help shape a brighter future. That brighter future can be impacted by the maturity and effectiveness of the management systems that help guide a business through its core organizational objectives while staying financially competitive and in business.

The aim of an integrated management system is toward those organizations that have instituted a single management system that has as its focus two or more management system approaches. Whether or not those management systems are commercially available, based on international standards, or developed and designed in-house, the effort to rationalize an integrated approach to these management systems is often a reasonable one, yet one with some initial challenges about how best to approach the effort.

The objective of this book is to profile many of the important issues and challenges associated with this integrated management system journey and to highlight many of the practical considerations for the effective development and implementation of your integrated management system approach. Whether or not

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you decide on certifying or registering your integrated management system is up to you. This book is intended to profile the things you'll need to consider and demonstrate should you wish to travel down the road of having one management system that encompasses all of your other management systems pieces into one system.

Whether you have an existing formal system or not, it is always wise to adopt a structured business process approach to your management system development. The task is not for the faint of heart. Aside from the normal business and financial challenges, there will be other barriers in the form of personality- and people-based resistance that you will have to manage. But the strength of your business case should hinge on the fact that the benefits of one comprehensive, rationalized, and coherent system can serve the divergent business needs while giving you maximum flexibility.

This book can be used as a road map to assist in identifying standards, tasks, recommended approaches, and processes. Our approach begins by looking at your business environment as a whole while seeking to find the balance of establishing and achieving its objectives and core processes. It offers both practical items for consideration and key ideas and principles worthy of discussion and debate within your own organization in order for you and your management team to make intelligent, informed decisions about the future and focus of your integrated management systems. It puts you "in the driver's seat" and profiles the real-world issues each and every individual charged with designing and implementing management systems face on a day-to-day basis.

The bottom line of integrated management systems: a guideline for a more efficient, effective, and productive business that has rationalized the logic of its business practices, markets, and risk with the goal of a healthier balance sheet.

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A PRIMER ON INTEGRATED MANAGEMENT SYSTEMS

Many times the best place to start is at the beginning. So it is with this book on integrated management systems. Perhaps it would be beneficial to start with a definition of an integrated management system, right from the start, to set the foundation for the ideas contained in this book. So first of all, what is a management system? Simply stated, a management system is the framework of policies, systems, processes, and procedures used (hopefully effectively) to ensure that an organization can fulfill all tasks required to achieve its defined business objectives.

It may be argued that some organizations function quite well without a formalized or structured management system. Competition in their respective area of business may be limited, risk may be minimal, or perceived as minimal, and activities may be uncomplicated or mature. Processes and business knowledge reside in the heads of the individuals who manage and work for the company, and while those people are around, the company thrives. However, if circumstances change, a company's strengths can become their weaknesses. When customer bases increase, competition is introduced or increases, more complicated processes are introduced, regulators impose new or more stringent requirements, or skilled and knowledgeable personnel move on, the organization becomes at risk and the need for a more formalized management process emerges.

Larger organizations or those with complicated activities are more likely to have clearly defined processes, documented procedures, well-developed personnel hierarchies, and more sophisticated record keeping. The need for structure to manage risk and to ensure consistency, efficiency, and continuing capability is easy to understand. It is more obvious that systems are required to provide order and maintain effectiveness.

To ensure effective control and to meet the requirements of customers and stakeholders, including regulatory bodies and the community at large, more and

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more organizations are implementing formal and strategic management systems. Depending on what is needed to maintain control and guide improvement, different system models may be used. Some of the more recognized management system models include:

- ISO 9001 (Quality Management Systems)
- ISO 14001 (Environmental Management Systems)
- OHSAS 18001 (Occupational Health and Safety Management Systems)
- CSA Z1000 (OHS Management System / Canada)
- ANSI/AIHA Z10-2005 (OHS Management System / United States)
- ILO-OSH 2001 (OHS Management System / International)

Depending upon the type and complexity of organizational activities, the decision may be made to implement more than one system. For example, it is not uncommon for organizations to create separate management systems to control quality, occupational health and safety, or environmental areas and sometimes, discreet functions within those areas.

But the success of even the best systems can be undermined if those systems do not consider or complement each other. It's been suggested that without a holistic approach to their management and interaction, even good systems can result in bureaucracy, duplication, and suboptimization. In other words, they can become dysfunctional.

Over the past couple of decades, companies large and small have been driven by customer, regulatory, industry, and internal motivators to implement quality, health and safety, and environmental (QHSE) management systems. While these can operate separately, all typically share a set of common characteristics and there is undeniable value in managing them in an integrated fashion, provided that there is compatibility. That value comes from resource optimization and work execution rationalization. In other words, the old cliché of working “smarter and not harder” is given credence. Compatibility also becomes an important consideration.

ISO Guide 72, the guideline that provides those who are tasked with writing standards with a framework of common management system requirements, defines *compatibility* as the “suitability of similar standards for use together under specific conditions to fulfill relevant requirements without causing unacceptable

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interactions.”¹ In other words, if common characteristics can be rationalized and implemented in a shared fashion, without duplication or conflict, the management systems are deemed to be compatible.

The common characteristics of some of the well-known management system models include:

- Policies, and the objectives and targets associated with them
- Planning that reflects the strategic and management system objectives and uses factual information flowing from the management system
- Organizational structure defining roles, responsibilities, and authorities for personnel performing work that can impact upon the management system objectives
- Processes, procedures, and resources to carry out organizational and management system activities
- Methods for measuring and evaluating performance
- Correction of problems and identification and implementation of opportunities for continuous improvement
- Management review of system performance, with feedback into the planning process²

The Case for Integration

The list of benefits to be realized by implementing management systems and consolidating common system requirements can be a long one. They can include:

- Alignment of business and QHSE goals and maximization of key performance indicators
- Recognition of how all people and processes interact and affect each other for more effective management of interfaces
- Creation of an integrated team approach focusing on mutual goals and benefits
- Establishment of common objectives, processes, and procedures
- Creation of synergies, thereby reducing redundancy and increasing effectiveness and efficiency

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- Reduced risk through management based on factual data and overall analysis of performance metrics
- Systematic prioritization of effort for greatest organizational benefit
- Single framework for performance enhancement across all functional areas
- Comprehensive identification and analysis of problems and opportunities to improve
- Prevention of suboptimization—advancement of one area at the expense of another
- Increased understanding of all customers' and stakeholders' needs, wants, and perceptions
- Savings of time, money, and effort
- Establishment of accountability and clear boundaries
- Improved internal processes and communications³

And the list can go on and on. By establishing objectives and targets and then measuring progress against them, top management can ensure that the decisions and directions taken by the organization serve customer expectations and the strategic business goals of the organization. Clearly communicating the objectives and targets and establishing key performance indicators (KPI) that reflect them promotes understanding by the organization's personnel of the goals and how their activity and effort contributes toward achieving them. In other words, "I know how what I do around here contributes to the success of the company, which in turn garners me and my staff a continued paycheck." That's the bottom line for any business.

An effectively implemented integrated management system aligns policy with strategic and management system objectives and provides the framework upon which to translate these objectives into functional and personal targets. The goal-oriented framework depicted in the following diagram demonstrates how goals established at the uppermost levels of the organization flow down through the integrated management system to influence functional and personal objectives and targets.

Monitoring, measurement, and review activities, which are fundamental parts of most management systems, provide factual information upon which to make informed and prudent business decisions. Analysis of performance data allows

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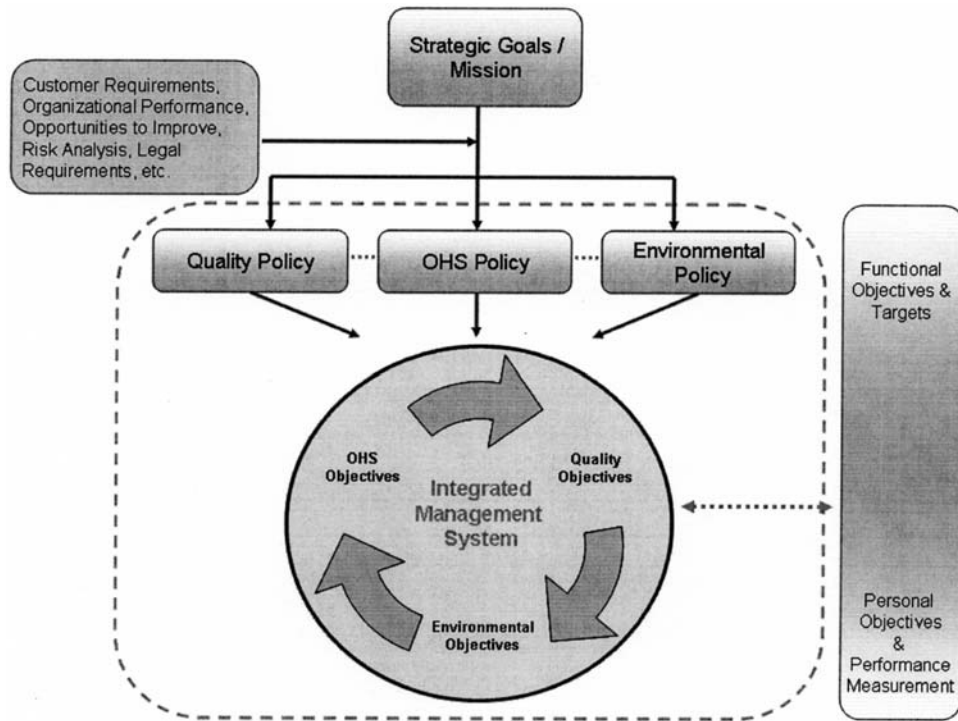


Figure I.1. Goal Oriented Framework

managers to gauge success in achieving objectives and to prioritize initiatives and activities based on where the greatest organizational benefit will be realized. Monitoring, measurement, and review processes provide input into the planning cycle, resulting in better decision-making, and, hopefully, reduced risk. Often, these processes can serve multiple system requirements. For example, a single means for carrying out and documenting corrective action to correct the root cause(s) of problems may be implemented with input coming from the quality, health and safety, and environmental management systems. This input can then be separated or viewed in total, depending upon the need. Logically, one might ask, why have different systems for managing different corrective actions? Still more relevant, why spend more money on different systems when one common system will do?

By far the most widely known international management system standard, ISO 9001:2000, describes a "process approach" for the development, implementation, and improvement of quality management systems. This approach recognizes that an organization is a system of processes and practices whereby the output of one process will likely form the input into another. While other standards may not

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specifically call for this approach, it is nonetheless one that can be effectively used to identify all the activities an organization needs to consider, including how they interface, and what controls must be put in place to ensure success and reduced risk.

In adopting this approach, all parties in the organization are able to recognize how people and processes interact and affect each other. Interfaces can be managed more effectively, and individuals develop an understanding of how their efforts contribute to the success or failure of their processes, or the processes of others.

Implementing and maintaining an integrated management system can provide the opportunity to identify and create synergies, thereby reducing redundancies, increasing effectiveness, and maximizing efficiencies. Establishing one set of processes and paperwork to accommodate the common areas of multiple systems reduces the overall size of the management system structure, reduces duplication and, in the end, reduces cost. And who's not concerned about reducing costs these days? Furthermore, when processes are created in isolation (or silos), the risk exists that measures designed to serve the best interests of one area may actually impact negatively upon another. An integrated, process-based approach prevents suboptimization and helps keep bureaucracy to a minimum, while at the same time enhancing system-based communication initiatives.

Typically, some of the core activities that fall within the "do" phase of the Plan-Do-Check-Act cycle are specific to one management system or another and may, therefore, need to be carried out and managed as such. However, the outputs of these activities may be fed through a common process for management review and subsequent organizational planning. This means that managers can take the "60,000 foot view," and by considering the needs and information produced by each system, make decisions that represent the greatest organizational benefit.⁴

Challenges to Integration

As is the case with any fundamental organizational change, the idea of integration does not come without its challenges. Unless top management actively leads and demonstrates real commitment to the integration effort, it is in danger of failing.

It is not unusual, however, for functional managers whose own systems are deemed to work well to feel threatened. The development, implementation, and maintenance of a management system are time-consuming, and frequent challenges can be encountered. Having gone through this process and reaching a point of comfort, functional heads in the areas of quality, health and safety, and

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environmental management could be forgiven for being reluctant to start another period of “storming.”

On the other hand, these individuals are, by nature of their positions, generally comfortable with the concept of continuous improvement and champions for effective and efficient process management within their own disciplines. Top management must engage these key individuals and make it possible for all concerned to focus on the process rather than on comfort or ownership.

There are other challenges—sometimes real and sometimes perceived. Perhaps one of the most common fears encountered is the perception that defining processes and advocating consistency will stifle entrepreneurship, creativity, and flexibility. Also, historically, management systems were based on written procedures and a multitude of paperwork that ultimately increased bureaucracy and enforced controls that sometimes simply did not make sense. Perhaps on paper it made sense, but in the real world of day-to-day operations, challenges were seen and major obstacles were introduced.

The development of any new system carries with it certain costs. Likewise, integrating systems requires dedicated resources. If not well planned and implemented, the integrated system can quickly become a major cost area and a source of frustration. And if not managed well, the whole exercise of integrating management systems and processes can contribute to “turf wars” due to overlap or gaps.

One of the biggest decisions at the outset of the integration effort is whether to use internal resources or enlist the help of outsiders. If the choice is made to have the process remain within the company, and the person(s) tasked with designing the IMS are not completely competent and experienced in the management system and the requirements of the management system, the effort will often be plagued by false starts, unnecessary paperwork, inferior templates, and other outward indicators of inexperience. On the other hand, if a competent, external consultant is engaged, it is vital that both the credentials and the basic consulting philosophy of that consultant are well understood and aligned with the best interests of the organization. While anyone can hang a shingle, not all consultants are created equal. And without the requisite up-front work, the integration project can become a retirement fund. Translation—do your homework before hiring an integrated management systems consultant.

Even so, the business case for the integration effort is generally a strong one. With proper planning and focused effort, the efficiencies and savings to be realized from well-planned integration can far outweigh the up-front costs.

Consider the following example in which the audit and review processes of three management systems are combined for maximum benefit:

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ABC Company has three mature and well-established groups within the QHSE division. The quality, health and safety, and environmental groups each schedule and carry out a series of internal audits and compliance assessments. The results of these assessments are presented independently to upper management in formal management reviews. Also, internal auditors in each group are recruited and trained, with emphasis on their respective disciplines.

ABC Company decides to integrate the auditing and management review activities. To do this, time and effort are required. Plans, procedures, schedules, and checklists must be revised. Auditors from each group must be trained in other areas of the integrated management system. Time must be taken from normal duties to accomplish these tasks.

But once the up-front work has been done, the long-term benefits begin to be realized. Integrated schedules and checklists mean fewer audits. Cross-trained auditors can audit common management system elements together, thereby reducing the number of audits and freeing up more time for individual auditors and auditees alike. Management reviews may be reduced in number and increased in effectiveness. Factual information from each management system can be presented and considered together. Top management no longer views the information from each system in isolation but can more easily take the broader organizational view. Priorities can be established based truly on the areas of greatest organizational benefit, and QHSE objectives, targets, and goals can be aligned.

It is a common misconception that in order to develop and integrate management systems, businesses must restructure their processes and practices around the requirements of the guidelines or practices upon which the systems are based. This is not the case. Management systems have a greater chance of succeeding if they are created to reflect the way the organization actually does business. Rather than imposing procedures that don't quite fit and mandating the use of generic templates, organizations should instead undertake a gap analysis of existing practice and documents against the management system requirements. Once gaps in compliance and areas for improvement have been identified, a plan for implementation can be established and priorities can be set.

Systems Approach to Management

In the 1950s, quality guru W. Edwards Deming developed a continuous improvement model based on a sequence of four steps: Plan-Do-Study (Check)-Act. The "PDCA" cycle, also known as the Deming Wheel or the Deming Cycle, had its

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origin with the prominent statistician and Deming's mentor, Walter A. Shewhart, who introduced statistical process control at the Bell Laboratories in the 1920s. Deming expanded upon Shewhart's Plan-Do-See model and introduced process improvement and the continuous feedback loop.⁵

Using the PDCA cycle, individual processes are planned and carried out (PD). The results of those processes are checked and any action required to improve them is implemented (CA). Overall performance and results are analyzed and are fed back for consideration in the next planning phase.

Applied on an organizational level, the PDCA cycle allows management to view the organization as a system of processes that interact and influence one another. Managers plan based upon factual information gathered during the performance of work and analyze results in order to effect organizational improvements.

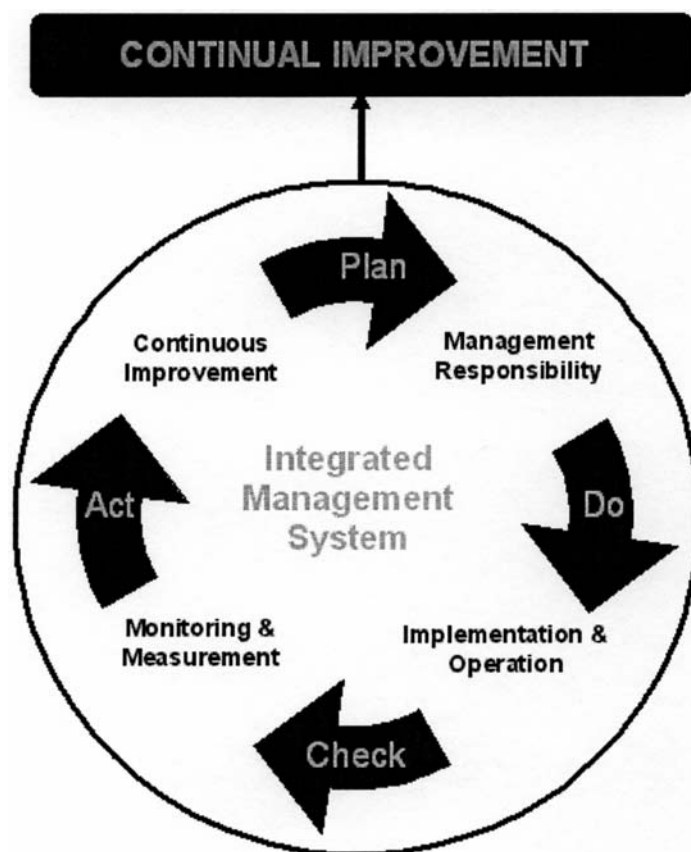


Figure 1.2. Management System PDCA Cycle for Continuous Improvement

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Today's most commonly used management system frameworks are based to some degree upon variations of the PDCA cycle. System diagrams may vary somewhat from standard to standard, but all reflect the same PDCA system approach when defining management, implementation and operation, monitoring and measurement, and improvement activities.

Early models for management systems organized requirements in discreet elements. For example, until its 2000 version, the ISO 9001 international quality management system standard was comprised of twenty elements that were treated as individual activities and were generally managed and audited as such. As this type of management system model was put into use, it was recognized that successful organizations do not operate in silos. Various processes and functions affect each other. They do not necessarily operate independently, but they often affect each other. Nor do they work sequentially. Sometimes they take place simultaneously or cross over each other. More recent revisions of the popular standards mirror real-world organizational structure and flow, thus making them more applicable to the organizational processes they control. At the same time, the big hitters, including ISO 9001, ISO 14001, and OHSAS 18001 have been aligned to one another and all reflect the PDCA cycle. Current versions not only reflect how companies really work but also maintain a common framework, thus making it possible to more easily integrate them.

In the 1980s and 1990s the more commonly applied management system models were organized into elements. Key activities were treated as independent, and organizations often struggled to make their management system structures fit into the established frameworks of the chosen standards. In some ways the standards were, on the surface, discouraging the "silo mentality" while at the same time actually compelling their users to try to fragment their documentation and system controls into compartments.

As the use, application, and understanding of management systems grew, revisions to the standards mirrored that growth. The language of the standards changed to reflect the diversity of businesses seeking to apply them. It was recognized that whether they related to quality, health, safety, or environmental areas, the management systems were just that: management systems. The commonalities were identified, and the various standards began to align. Perhaps the most significant evolution was recognition of the fact that an organization does not (or perhaps more accurately, should not) operate in silos. Rather, they are a system of processes that often happen simultaneously and the output of one process forms the input into another.

Today's management system models are based upon a system- and process-based approach. The system approach identifies that effective management systems consist of several components. These include:

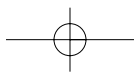
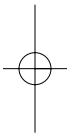
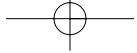
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1. Identifying and meeting the needs and expectations of customers, stakeholders, and other interested parties
2. Developing policies, objectives, and targets required to help meet these needs and expectations
3. Implementing processes and defining the responsibilities needed to meet goals and objectives, to effectively carry out work, and minimize risk
4. Identifying and providing necessary resources
5. Establishing and applying measures to determine effectiveness and efficiency
6. Managing nonconformances and preventing recurrence by eliminating their causes
7. Identifying and implementing opportunities for improvement

Although the interpretation of these components may differ slightly depending upon the type of management system involved, the components themselves are always present.

For example, consider #1: Identifying and meeting the needs and expectations of customers, stakeholders, and other interested parties. For the quality management system the focus may be upon the end-use customer or the needs of the next department down the line of delivery. For the environmental management system, the definition of the customer expands to include regulators, the community, and those potentially affected by environmental issues. For the health and safety system, the primary focus becomes the protection of the internal customer and those working under the influence of the management system processes. In all cases, customer focus is the overlying principle. Organizationally, a system must be in place to identify the customers, stakeholders, or interested parties, to define and achieve their expectations and, where possible, to implement improvements to better serve their interests.

Each management system within the integrated framework has its own requirements, particularly within the “do” phase. But, there are always common areas, and these serve as the basis for integration.



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INTEGRATED MANAGEMENT SYSTEMS: PRACTICAL APPLICATIONS

At the core of the integrated management system are the requirements of all constituent systems that can be managed together (e.g., management review). Next are those that are common to two systems and can be carried out together (e.g., task risk assessment). Finally, there are those that are specific to individual systems. All are supported by common organizational processes and reflect overall goals and objectives. The outputs of all management system processes are considered when implementing improvements and planning and determining resource requirements.

It is important to remember that in order to be integrated, components must logically fit together and must be managed together. Merely putting procedures from various systems into one master document file does not equal integration. True integration ties all components of the organization into one coherent system where all activities, whether implemented together or individually, are focused on achievement of overall goals and are ultimately the guiding mission of the organization.

At its most evolved state, an integrated management system would see managers taking care of a range of functions within their area of responsibility. A common example is the QHSE department, wherein quality assurance/quality control, health and safety, environmental management, and even security have processes in common and are managed together within the umbrella of the QHSE management system to serve organizational goals and objectives.

Common Requirements of Management System Standards

As discussed, integration logically begins with the elements that are common to all of the applied management systems. In the following QHSE example, the common elements carry through the quality, health and safety, and environmental

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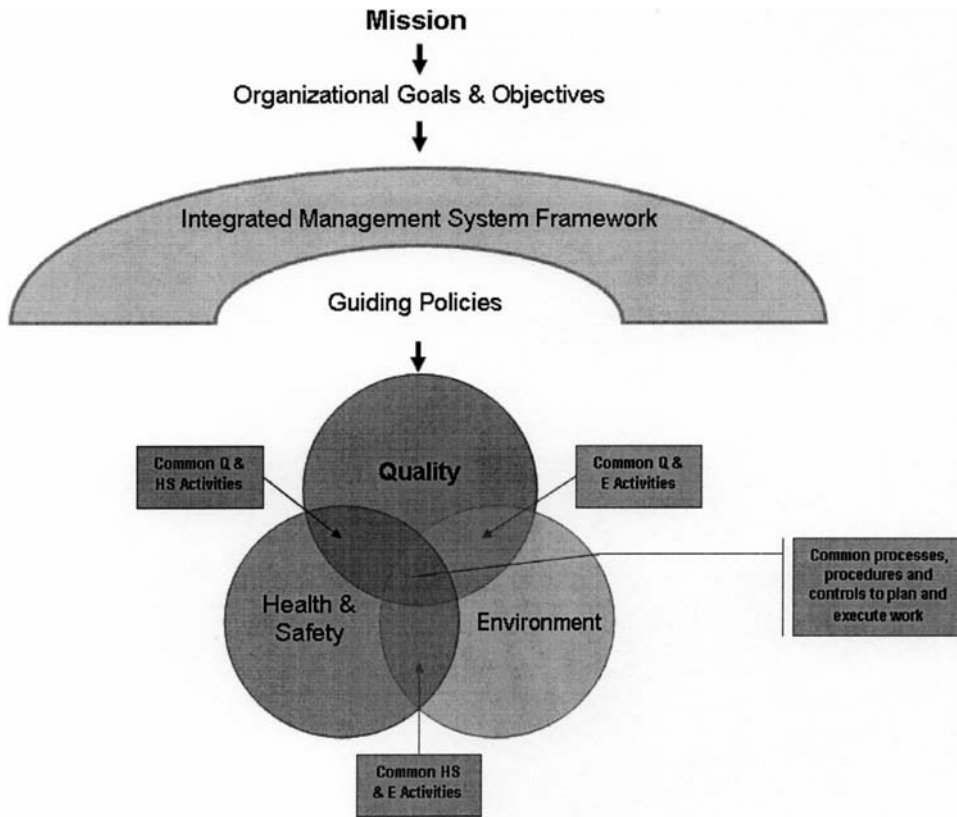


Figure 2.1. Integration Model for HSEQ Systems

management systems and support the specific requirements of each individual system within the integrated framework.

ISO Guide 72 identifies a number of common elements that exist among most management systems and that can be arranged under six main subject areas:

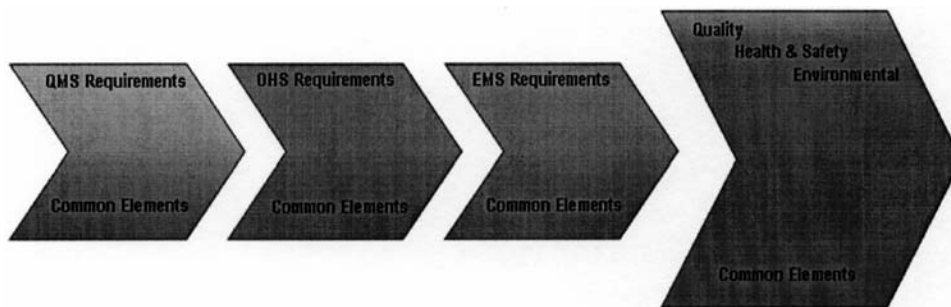


Figure 2.2. Common Requirements as the Basis for Integration

INTEGRATED MANAGEMENT SYSTEMS: PRACTICAL APPLICATIONS

1. Policy
2. Planning
3. Implementation and Operation
4. Performance Assessment
5. Improvement
6. Management Review

This structure reflects the process approach to the PDCA model and is used by writers of various standards and guidelines to organize requirements into a common set of activities. Within each of the subject areas, similar management system requirements can be addressed.¹

PLAN

Policy

Quality, health and safety, and environmental management standards share a requirement that top management define the overall policy with respect to the management system. This policy should demonstrate the organization's commitment, reflect the mission of the organization, and provide a framework for setting objectives and targets.

The policy must:

- Be appropriate to the activities, products, and services of the organization
- Include a commitment to comply with the requirements of the management system, including relevant legal and other requirements to which the organization subscribes
- Include a commitment to continually improve
- Provide a framework for establishing and reviewing objectives
- Be communicated and understood by all persons working within the organization
- Be reviewed at regular intervals to ensure continuing suitability

Policies for quality, health and safety, and environmental management may be separate or incorporated into one overall HSEQ policy. Whichever approach is taken,

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the process by which management develops the policies, reviews them, and communicates them is the same. Area-specific policies should be compatible with the nature and intent of the overall policy.²

Planning

To be effective and to improve, all organizations must plan and prioritize. In the planning phase, organizational objectives and targets are set, risk is evaluated, legal and other relevant requirements are considered, past performance is measured, and opportunities for improvement are identified. During the planning phase, these common activities take place:

Objectives and Targets

Clear objectives and targets must be established for an effectively functioning integrated management system. They must be realistic, measurable, and consistent with the overlying policy. They must take into account legal and other requirements, including those of customers and identified stakeholders, risks, results of past performance, and the outcome of management review. Objectives and targets must be set at all relevant functional levels, measured, and modified as needed to reflect changes. In addition to these common characteristics, specific management system objectives may also address other requirements. For example, environmental management system objectives and targets must take into account environmental aspects and impacts that could possibly impact the organization's public relations image.

Aspects, Impacts, and Risks

The organization must identify the aspects of its activities, products, services, or locations that relate to the management system, evaluate the risk associated with them, and consider them when setting objectives and establishing, implementing, and managing the management system. Within the environmental management system, the organization would be expected to identify the environmental aspects that could potentially impact upon the environment and over which the organization has control. In the area of health and safety, the organization would take appropriate steps to identify hazards and risks to people. Under the quality management system, the organization would consider risks to organizational performance, including finance, scheduling, and customer satisfaction. Again, while the application of the overall requirement may differ, the aspects, impacts, and risks can be determined, documented, managed, and reviewed in common, as they often overlap.

INTEGRATED MANAGEMENT SYSTEMS: PRACTICAL APPLICATIONS

When addressing risks, more and more organizations are developing comprehensive risk management strategies that bring all forms of risk identification and management under one umbrella. For instance, rather than developing separate means for ranking risks in different areas, an overall organizational risk-ranking process and matrix may be put in place with consideration given to significant risk areas such as people, environment, assets, production, regulatory compliance, public perception, etc. Likewise, risk identification and controls at the task level may be common to two or more systems. For instance, on the job site, task risk assessments and toolbox talks would cover not only health and safety risk-reduction measures but also those associated with environmental aspects and their potential impact.

Identification of Legal and Other Requirements

The organization must identify and have access to legal and other relevant requirements to which it subscribes relating to its products, activities, or services. These requirements must be considered when planning and implementing the management system and the activities of the organization. An inherent aspect of all management systems is the requirement for them to comply. Examples of legal or other requirements would be a relevant industry code or an OHS regulation.

Organization Structure, Roles, Responsibilities, and Authority

In order for the organization to be effective, it is necessary that people understand their roles, responsibilities, and authorities in relation to their job functions and the management system. Top management must define and document these roles and their interrelationship and communicate them within the organization.

The various management system standards all identify the need for a management representative who, irrespective of other duties, has the defined responsibility and authority to ensure that the management system is established, implemented, and maintained in accordance with the relevant standard and who reports to the top management team on system performance and opportunities for improvement. Where two or more systems are integrated, the management representative may represent the interests of all systems.

Contingency Planning/Emergency Preparedness

The organization must establish processes and procedures to identify and respond to potential or actual emergencies, accidents, or disasters. Procedures must be established to prevent or mitigate the consequences of such occurrences, taking into

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consideration such things as safety of personnel, potential environmental impacts, and continuity of business operations. Emergency response programs and exercises may effectively cover unplanned events of any type.³

DO

Implementation and Operation

Operational controls and product and service realization processes must be established and carried out under specified conditions to meet objectives and satisfy requirements. While all management systems require these controls, it is typically in this area that the systems will diverge and activities and procedures specific to the individual management system will be required. However, it is still important to remember that processes seldom take place in isolation, and the failure to effectively carry out a process specific to one management system may still influence the success of a process in another area. Likewise, failures in different areas may have a common result.

For example, within the health and safety management system, great care may be taken to manage behaviors and conditions that could result in harm to people. The same care may be taken within the environmental management system to manage aspects that could have significant negative impact upon the environment. But, if the procedures or equipment that is managed through the quality manage-



Figure 2.3. Example of Potential Common Impact of Failure Within Individual Systems

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ment system are not effective, an incident that causes damage to people or the environment is still inevitable.

During the implementation and operation phase there are also shared requirements. Like those in other phases, common processes and procedures may be established to control and implement them.

Resource Management

Infrastructure and environment The organization must determine, provide, and maintain the infrastructure needed to achieve its objectives, ensure product conformity (quality), and protect its people (health and safety) and the environment (environment). This includes buildings, equipment, tools, work spaces, utilities, and supporting services such as transportation or communication. It must also provide a suitable working environment in which people can work to their, and the organization's, best advantage. Failure to provide any one of these could potentially result in nonconformances, delays, additional cost, or harm to people or the environment.

Human resources All management systems are dependent upon the competency of the people who work within them; therefore, it is important that the organization defines the required competencies associated with the work being performed and ensures that people carrying out that work have those competencies. A distinction has been made between "competency" and "qualification," recognizing that a person may possess the required paper qualifications to occupy a position but may not necessarily be competent to do the job. Competency is a combination of education, training, skills, and experience in a particular job or task. It may be attained through formal education, training external to the organization, internal instruction, on-the-job training, or a combination of these and other means.

Within the human resources function, processes may be instituted that address the requirements of several standards. This would typically include processes to:

- Identify core and QHSE competencies associated with a position (e.g., job descriptions)
- Hire and provide indoctrination to new employees
- Identify requirements for competency enhancement and provide training or take other appropriate action
- Maintain records of competency and training

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- Evaluate the effectiveness of training or other action taken to achieve competence
- Evaluate performance

Policies, procedures, and processes for human resource management are generally applicable to all management systems. For example, training matrixes may identify core job-related skills as well as health and safety, regulatory, environmental, and other training.⁴

Documentation and Records

All management systems require documents, and all require records. To understand these requirements, it is necessary to first understand the difference between a management system “document” and a “record.” The guiding policies, procedures, checklists, and forms that make up the system are defined as “documents.” Records provide historical information of performance. For instance, the blank version of a form is a management system “document.” When the form is filled in, it becomes a “record.”

One of the most common problems associated with building a management system is the tendency to overdocument. Recent versions of standards such as ISO 9001:2000 (ISO 9001:2008) [AQ 2.1] have become less prescriptive in their documentation requirements, leaving it largely to the user to determine what level of documentation is required to maintain effective control and to continuously improve.

Most management systems are, however, fairly consistent in that their basic documentation structures usually include:

- Policy statement(s);
- Objectives and targets
- Manual or a similar document setting forth strategy or policy
- Procedures for key management system areas
- Additional procedures or work instructions deemed necessary by the organization to maintain effective control
- Flowcharts, forms, checklists, and other supporting documents
- Records⁵

A typical management system document hierarchy can be depicted by a classic pyramid example:

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Document and data control Management system documents and data must be controlled. Once established, processes and infrastructures for document and data control will serve multiple management systems. These must include controls to:

- Approve documents for adequacy prior to use
- Review, update, and reapprove documents when necessary
- Identify changes and revision status
- Make relevant versions of documents available at all points of use
- Ensure that documents are legible, identifiable, and accessible
- Ensure that documents of external origin are identified and distribution controlled
- Identify and prevent unintended use of obsolete documents

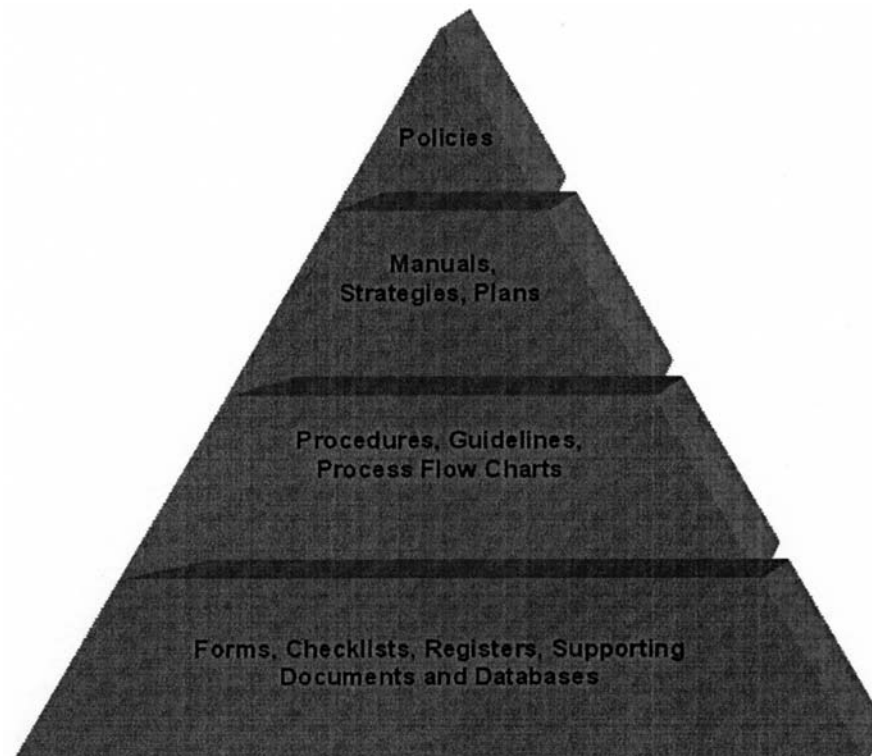


Figure 2.4. Document Pyramid

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Master lists and master document files are fast becoming replaced by electronic databases with restricted access and electronic signatures (see the chapter on management systems and IT solutions). This is an effective way to ensure that revision control is maintained and that current versions are available at all times. Where electronic document management systems are put in place, regular backups become a key requirement for records management.

Records management As is the case with document and data control processes, procedures for records management are also common to all management systems. Once established, records management practices can accommodate all information, regardless of source. Requirements for records management call for the establishment, implementation, and maintenance of controls for the identification, storage, protection, retrieval, retention, and disposal of records. A records matrix is a helpful tool when defining records controls.⁶

All management system models require procedures for document and data control and records management. Documents and records can be in any form or media. Therefore, arrangements must be made to control and protect both hard copy and electronic documents and records in whatever format they may be produced. One suite of procedures will serve different management systems. Depending upon the complexity of the organization's documents and records, any number of procedures may be needed, but they will generally include:

- Document identification and numbering
- Approving, issuing, and revising documents (including revision control)
- Control of documents of external origin (including standards, codes, and other legal documents);
- Design document control
- Supplier document control
- Records management procedure
- Control and backup of electronic records
- Disaster recovery plan

Communication

Mechanisms for communications, both within the organization and with external parties, can be designed to accommodate all management system requirements. Authorities for communication may differ from system to system. For example, one party may be tasked with media communication, another with

Table 2.1. Sample Basic Records Matrix (partial)

<i>Record Type</i>	<i>Responsible</i>	<i>Identification Method</i>	<i>Paper Storage</i>	<i>Electronic Storage</i>	<i>Handling</i>	<i>Retention Period</i>	<i>Disposal Authority</i>
HR Files	HR Manager	Alphabetical, by name	Locked cabinet, HR Office	HR drive, controlled access, BU daily	No special requirements	1 year following completion of contract	General Manager (shred)
Data Recordings	IT Technician	Numerical, by date	Fireproof cabinet, IT office, off-site vault	Main server, BU server	Fireproof, waterproof container	30 days	IT Manager
Audit Files	HSEQ Manager	Audit Number	Locked cabinet, HSE office	Shared HSEQ drive, general read-only access	Considered "company confidential"	3 years	HSEQ Manager

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communication with regulators, and another with internal communications; however, all persons and departments within the organization share the processes for communication and the means by which communication takes place. At a minimum, organizations must establish the means to communicate internally among the various levels and functions of the organization as well as methods to receive and respond to communications, including complaints from customers and other interested external parties.

The first step is to implement the means for communication. Examples can include electronic mail, bulletin boards, meeting structures, newsletters, intranet, forums, information sessions, or whatever other means are appropriate. The next step is to ensure that these mechanisms are effectively put into use and that the information gathered is funneled into the overall management process.

Supplier Management and Purchasing

While not all management system models explicitly state a requirement related to supplier management and purchasing, this is, nonetheless, an important and common area of consideration. Of particular interest is contractor safety management, especially if your staff and contractors are to be performing work or similar high-risk tasks in the same location or in close proximity to your own workers.

Supplier management ISO 9000 includes *mutually beneficial supplier relationships* in the eight management principles upon which a quality system is built. This serves to recognize that suppliers of critical goods and services that potentially impact upon the deliverable to the customer or upon key internal processes are vitally important to the organization's overall success. It also recognizes that it is not always practical to eliminate potential suppliers if their performance has not been satisfactory. Sometimes there is only one supplier or the customer or intercompany relationships dictate the use of a certain supplier. In these cases, processes must be established to ensure effective control over the product or service being supplied or to help the supplier to improve. So, having established that mutually beneficial supplier relationships will help ensure quality, it is not a big step to apply the same philosophy to the areas of health and safety or environmental protection. It is equally important that suppliers whose people, product, or performance can impact upon HSE also have appropriate HSE processes in place or are trained in, and perform within, the contracting organization's own processes. Contractor safety management is a key example here. Therefore, processes for supplier management can be deemed to be a common management system requirement, although they may at certain times be applied slightly differently.

Purchasing ISO 9001 requires that organizations have processes for defining and documenting purchasing requirements, including those for quality (e.g.,

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inspections, test certificates, etc.). Essentially, if the specification is not clear to the supplier, the product or service provided may not be acceptable. Purchasing documents should also state any applicable HSE requirements. For example, in the case of coveralls, the purchase agreement will stipulate the number, quantity, and size of the coveralls as well as the applicable fire rating, color, and markings. Hence, the single system for controlling purchases is applicable to the quality, health and safety, and environmental management systems.⁷

CHECK

Performance Assessment

In the Plan-Do-Check-Act model for management systems, the third cycle calls for monitoring and measurement to determine the extent to which requirements are being met. Information is recorded to track performance of operational controls and to evaluate the ability of those controls to achieve the planned results. Information is also recorded to evaluate achievement of objectives and compliance with various management system requirements.

Monitoring and Measuring

Monitoring and measurement of processes and their output (products) is fundamental to any system and necessary in every department. Product inspections and tests, calibrations, design reviews, OHS inspections, service performance checklists, and verifications of calculations are all examples of monitoring and measurement activities. The outputs of these activities provide vital information that, although gathered from independent means, is directed through a common process of assessment in which the information is considered in its totality to provide an indicator of organizational performance and health.

At the ground level, there are often many opportunities to integrate monitoring and measuring activities to meet the needs of two or more systems. Common inspection activities and reports, checklists, and personnel assignment all aid in the integration of effort.

Compliance Evaluation

Organizations are required to evaluate compliance to the legal and other requirements to which they subscribe. Compliance evaluations are specific to the particular discipline; however, the system by which they are scheduled, carried out, documented, and input into management review can be common. The controls instituted to ensure compliance could also be common. Likewise, where practical, compliance assessments can sometimes be carried out by the same individuals at

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the same time where one area is subject to multiple regulatory or legal requirements and where compliance auditors are competent to assess those multiple requirements.

Internal Audit

As discussed earlier, the requirement for self-assessment is integral to the continuous improvement aspect of any management system. Audits determine whether or not the management system(s) conforms to the requirements of the standards and specifications to which the organization subscribes, has been effectively implemented and maintained, and is being complied with. Audits must be conducted, based upon the status and importance of the activity, the significance of the management system aspects, areas of risk, organizational performance, and the results of previous audits. They must be carried out by auditors who are objective and impartial—in other words, auditors should not audit their own work.

There is no need to have separate audit schedules, plans, reports, and audit management. In fact, this can lead to scheduling issues, redundancies, and time-management issues. Integration of the auditing function provides a bigger bang for the auditing buck. Plans, procedures, schedules, and checklists can be developed to meet multiple requirements. Since auditing protocols are basically the same regardless of the standard to which the audit is being conducted, auditors can be trained in auditing techniques and cross-trained in the requirements of the applicable management system requirements.

When integrated audits are performed, the audit report presents factual information spanning more than one management system. This means that management no longer views the performance information from each system in isolation. Actions arising from the integrated management systems audit can be more effectively prioritized to ensure that efforts are focused on areas of greatest organizational benefit and impact upon overall objectives, targets, and goals.

Nonconformance Control and Opportunities for Improvement

One of the key activities at the heart of any formalized management system is the identification and rectification of nonconformances. Although the wording may differ, all of the recognized standards require that nonconformances be identified and corrected, and that action be taken to mitigate their impact. It has been customary for nonconformance reporting among quality, health and safety, and environmental management systems to be carried out separately; however, this need not be the case.

Simply defined, a nonconformance is a failure to meet a specified requirement. That being the case, nonconformances can be identified in any area. While they

HSEQ Report Card

Card Number:	Date:
Title:	
Reference:	
HSE <input type="checkbox"/> Incident <input type="checkbox"/> Near Miss <input type="checkbox"/> Hazard <input type="checkbox"/> Suggestion	
QUALITY <input type="checkbox"/> Nonconformance <input type="checkbox"/> Opportunity for Improvement	
Describe the issue or opportunity	
Describe immediate action taken / suggested or the potential consequences	
Follow-up CAR # _____ Incident # _____ None Required <input type="checkbox"/>	
Signature:	

Figure 2.5. Sample Report Card (HSE and Quality)

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may be termed “hazards,” “near misses,” or “incidents” in the HSE system, these failures are still nonconformances.

In recent years, some organizations have moved toward developing a common set of forms and processes to identify and to take action on nonconformances and opportunities for improvement across several management systems. In the analysis process (also a requirement of formalized management systems), the type and nature of the issues can then be analyzed and comprehensive management reports can be prepared. One area that has significantly changed is the way in which technology is used to simplify these processes.⁸

ACT

Continual Improvement

Effective control is the outcome of a properly functioning management system. The next step is continual improvement, and this is where the management system can pay the greatest dividends.

For many years, standards such as ISO 9001 have carried an implied requirement for continual improvement. With no explicitly stated requirement, organizations holding registrations or claiming compliance could theoretically meet the minimum requirements of the standards year after year, showing no marked effort toward continual improvement. But standards are just minimums—particularly international standards that must be applicable in so many different countries and environments. It hardly benefits any organization to continually meet the minimum. Furthermore, management systems cost money, and it is when they are used to drive continual improvement that they pay for themselves several times over.

Many of today’s common or well-known management systems are very clear in their requirements for continual improvement, and the process-based models include several requirements that ensure that improvement takes place. Indeed, measuring progress against established objectives is the whole basis for today’s management systems and that one characteristic will, in and of itself, drive improvement.

Through the use of their policies, objectives, targets, audit results, feedback from customers and interested parties, analysis of performance data, corrective action, preventive action, and management review, organizations will improve their performance and ultimately, their bottom lines.

Corrective Action

Nonconformance control helps catch and correct problems. Corrective action delves into the root cause(s) of those problems—why they happened in the first place. A common mistake when implementing management systems is to require that every nonconformance have root-cause correction completed. Some issues are

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quite simply one-time events, and the time and effort taken to identify and eliminate the root cause(s) is time wasted. On the other hand, recurring problems or those that are critical and must not be repeated warrant investigation and root-cause correction, appropriate to the risks encountered.

The corrective action control process, forms, and management can and should be common to all management systems within an organization. This allows all issues to be considered together to ensure that priorities are established and that focus is given to those issues that represent the largest overall risk and/or return. Furthermore, the consequence of a significant issue is seldom restricted to one area. For instance, a quality issue can create a potential danger to people or the environment. An integrated approach toward root-cause investigation and corrective action, regardless of which system actually identified the issue, ensures that all impacts are given due consideration.

Corrective action logs, forms, teams, reviews, databases, and statistics should be integrated in order to make the greatest organizational impact.

Preventive Action

Whereas corrective action is reactive in nature, preventive action is proactive. It is the preventive action process that truly saves time, money, lives, and the environment. Catching and eliminating potential problems before they occur is obviously the most effective control that can be put in place. As is the case with the corrective action controls, those established for preventive action should be integrated. In fact, it is normal for the corrective action and preventive action processes to work together with common forms, databases, measurement, and resource allocations. This is a sensible approach. When judging whether an action is preventive in nature, the first question might be: "Is this proactive, or reactive to something that occurred?" If the latter, it is corrective.

In the quality world, if a nonconformance occurred, the action taken to address the root cause is corrective. If a nonconformance occurred, the action taken to ensure that it does not happen again is also corrective. If a nonconformance has not yet occurred, action taken to avoid one is preventive.

In the HSE world, action taken to address the root cause of an incident or accident is corrective. Action taken to address the root cause of a near miss is also corrective since it is in response to an actual occurrence. Action taken to eliminate a hazard is preventive.

With elimination being the optimal means of hazard or nonconformance control, the corrective and preventive action processes are two of the most important in management system structures. The requirement for corrective and preventive action is common to all systems, and the methods and documents may also be managed in common.

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Management Review

It might be said that the Plan-Do-Check-Act cycle starts and ends with management review. It is, arguably, the single-most important element of any management system. Through the management review process, committed leaders, acting upon factual information from the management systems, make informed decisions and identify the resources required to enable the organization to run efficiently, safely, and without damage to the environment.

Management review must take place at regular intervals to ensure the continuing suitability, adequacy, and effectiveness of the various management systems. Information gathered from various sources is analyzed and used to plan for the organization and to assess opportunities for improvement.

Health and safety, environmental, and quality management standards are consistent in their required inputs to management review. These must include, but should not be limited to:

- Results of audits, inspections, and assessments
- Feedback from customers and interested parties
- Performance data from various processes and systems (e.g., nonconformances, HSE statistics, etc.)
- Results of evaluations of compliance to legal and other requirements
- Status of corrective and preventive actions
- Changes that may affect the organization, including new legal or other requirements related to aspects and related risks
- Follow-up actions from previous management reviews
- Recommendations for improvement

Outputs from management review include decisions and actions necessary to improve the effectiveness of the organizational controls and the management system(s), improvements related to the requirements of the customer or other interested parties, and resources needed to enable improvement to take place.

Management reviews are documented, and action items may be managed within the integrated management system. The information that is input into management review is considered and used to plan—thus completing the Plan-Do-Check-Act cycle and starting it once again.⁹