ISO develops unique standard for auditing ISO 9000 and ISO 14000 systems

As part of ISO's response to ISO 9000 and ISO 14000 users' requirement for maximum compatibility between the two families of standards, the organization is developing a unique guideline for the auditing of both quality and environmental management systems. The draft International Standard ISO/DIS 19011, *Guidelines for quality and/or environmental management systems auditing*, was published on 31 May 2001 and has been distributed to ISO's members for a five-month ballot, closing on 31 October 2001. Its publication as an International Standard is expected in the second half of 2002. ISO 19011 will complete the ISO 9000 "core series" also comprising the revised ISO 9000, ISO 9001 and ISO 9004, published in December 2000. It is being developed by a joint working group set up by subcommittees of two of the most well known ISO technical committees: ISO/TC 176, *Quality management and quality assurance*, and ISO/TC 207, *Environmental management*. The development of ISO 19011 is a unique project for ISO as is it the first document to bridge the gap between the famous ISO 9000 and ISO 14000 families of standards. This article describes the background to this project and highlights the major features of the future standard.

Up to now, ISO had developed separate guidelines for auditing quality and environmental management systems (Figure 1). The three parts of ISO 10011 providing guidance on the auditing of quality management systems were issued in 1991. The three separate guidelines for the auditing of environmental management systems – ISO 14010, ISO 14011 and ISO 14012, were published in 1996.

During the development of the ISO 14010 series, due attention was paid to ISO 10011 and, therefore, the two sets of standards do not differ fundamentally from each other. In particular, ISO 10011-1 and ISO 14011 on audit procedures, and ISO 10011-2 and ISO 14012 on auditor qualifications, show great similarities. Of course, ISO 14012 requires that environmental auditors have knowledge of environmental management, environmental science and technology, and environmental legislation that is different from the knowledge requirements in ISO 10011-2. Nevertheless, the framework of qualification criteria in terms of education, training, and work and audit experience is basically the same.

BY DICK HORTENSIUS

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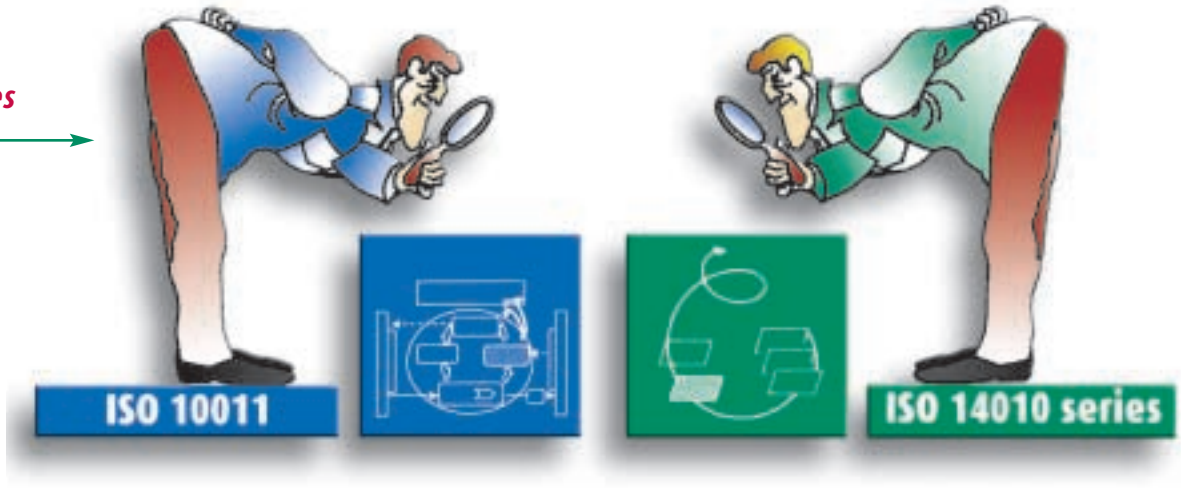
Figure 1
Current ISO guidelines for auditing



More recent was the development of a guideline describing the general principles of environmental auditing, ISO 14010. However, it was not considered necessary to develop a document on managing environmental auditing programmes and, therefore, the ISO 14010 series does not include a counterpart to ISO 10011-3.

Focus on compatibility and alignment

At the beginning of 1997, ISO/TC 176 and ISO/TC 207 paid renewed attention to their cooperation and the way in which they managed the development of compatible standards, i.e. standards that are easy to use in a combined or integrated manner. The reason for this revival of the "compatibility debate" was the finalization of the first important set of ISO 14000 standards in the second half of 1996 and, at the same time, the start of the revision process of both the ISO 9000 series and ISO 10011.

It was clear that both revisions would lead to fundamental changes in the standards, for example, ISO 9001 and ISO 9004 were to be based on the process model and ISO 10011 would incorporate a new approach to the qualification of auditors. Therefore, the establishment of new mechanisms to ensure compatibility was considered important. The Joint Co-ordination Group of ISO/TC 176 and ISO/TC 207 initiated various liaison groups, amongst which the Common Study Group on Auditing between the subcommittees (SC's) ISO/TC 176/SC 3 and ISO/TC 207/SC 2.

This Common Study Group had the task of investigating options to further align the ISO standards on auditing up to full integration and to assess the market need, support for, and the feasibility of these options. The group met for twice in 1997 and 1998. Its most important recommendation to the respective parent committees was to consider the development of one common ISO document on environmental and quality auditing, if necessary with add-ons for specific quality and environmental aspects.

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In March 1998, this recommendation was followed-up by the issuing of a joint new work item proposal for the development of a common ISO standard on quality and environmental auditing. This proposal was accepted by both ISO subcommittees and a joint working group (JWG)

was established that met for the first time in November 1998 to develop the single auditing standard.

This JWG (Figure 2) is chaired by two co-conveners: Alistair Dalrymple, from the French certification body, AFAQ, on behalf of ISO/TC 176/SC 3 and Andrew Griffiths, from Degussa Metals Catalysts Cerdec, Germany, on behalf of ISO/TC 207/SC 2. During the entire process, the Netherlands Standardization Institute (NEN) played a key role as it is responsible for the secretariats of both the ISO subcommittees involved, as well as of the Common Study Group and the Joint Working Group.

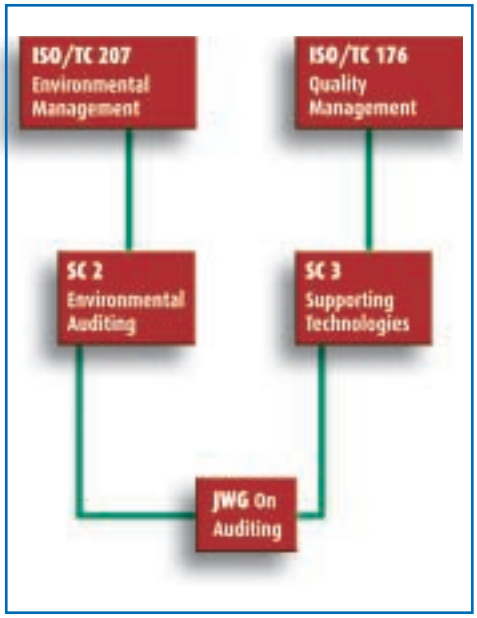


Figure 2 – Position of the JWG on Auditing

Breaking new ground with ISO 19011

ISO/DIS 19011, *Guidelines for quality and/or environmental management systems auditing*, is the product of seven meetings of the Joint Working Group and three internal Committee Drafts. The number 19011 – the first XX011 number available – was specially granted to this project by ISO. The idea behind this choice of number was to avoid linking the standard exclusively to either the ISO 9000 or the ISO 14000 family of standards, but on the other hand to maintain the relationship with the current auditing standards (ISO 10011 and 14011). The number 19011 can also be looked upon as a symbol that this project goes beyond the current gap between quality and environmental management.

From a first look at ISO 19011, it becomes immediately clear that:

– an explicit choice has been made to limit the scope of the standard to management system audits;

– all elements of the current ISO 10011 and the ISO 14010 series are embodied in the new standard.

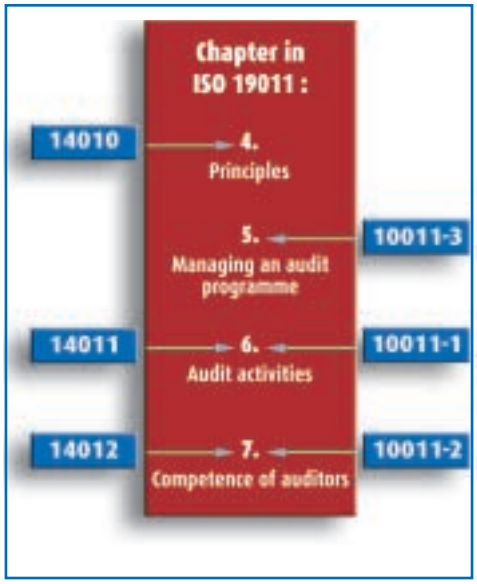
The first point means that various types of audits, such as environmental performance audits, (environmental) regulatory compliance audits, product audits and process audits are not covered by ISO 19011. Of course, performance, regulatory compliance, product and processes are elements of system audits, for example, where the capability of a management system to assist the company in complying with applicable legislation, or in achieving performance objectives, is assessed. However, it was decided to focus ISO 19011 on those quality and environment related audits that are closest to each other and can most readily be combined in a standard, as well as actual practice. At the same time, this provides a good opportunity to use ISO 19011 as a basis for other management system audits, such as those for occupational health and safety.

Figure 3 *(overleaf)* indicates how the various elements of the current auditing standards are merged in ISO 19011.

This does not mean that ISO 19011 is simply a combination of the current documents.

Proof that quality and environmental 'cultures' can sit down at the same table: co-conveners of the Joint Working Group on Auditing which is developing ISO 19011 – **Left,** Andrew Griffiths, from Degussa Metals Catalysts Cerdec, Germany, on behalf of ISO/TC 207/SC 2 (ISO 14000), and **right,** Alistair Dalrymple from the French certification body, AFAQ, on behalf of ISO/TC 176/SC 3 (ISO 9000).

Figure 3 – Merging of the ISO 10011 and the ISO 14010 series



Key improvements are:

– the clear set of definitions covering the relevant concepts of management system auditing;

– the concise description of the essential characteristics and principles of auditing and the auditing profession;

– the provision of the key aspects of managing an audit programme including clear linkages with the conduct of individual audits and the process of evaluation of auditor competence;

– the clear description of all elements of an audit process, and

– the competence approach to auditor qualification.

In addition to these, various practical help boxes are included in the text to provide additional detail and to assist, for example, small and medium sized enterprises, along with a number of figures presenting the key concepts of ISO 19011 visually.

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Potential users of the standard

ISO 19011 is intended to be applicable to internal as well as external management system audits. Therefore, the main target group are organizations having implemented a quality and/or environmental management system and thus having a need to conduct internal system audits. Another important target group are certification/registration bodies that conduct external system audits as a basis for the decision whether or not to issue a certificate of conformity to a management system standard.

Other potential users of the standard include organizations involved in auditor training or registration, organizations that provide consultancy in management systems, and accreditation bodies.

The guidance in ISO 19011 can be used to conduct audits on either an environmental management system or a quality management system separately, or to conduct combined audits on both systems (whether integrated or not) at the same time. This choice is at the discretion of the user and is not at all imposed by ISO 19011 itself. However, ISO 19011 reflects the market development that many organizations implement both quality and environmental management systems and want to optimize their auditing efforts.

The concept of auditing

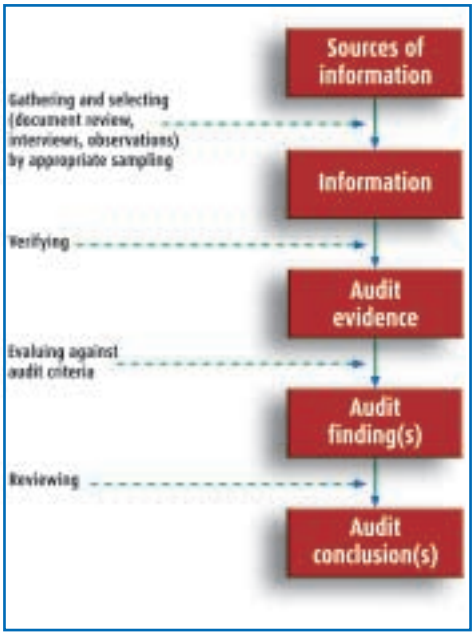
According to the definition in ISO 19011 an audit is *a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled*. Audit evidence is based on records, statements of fact or other

information that the auditor gathers and that can be verified. The audit criteria may be, for example, the requirements of a management system standard such as ISO 9001 or ISO 14001. The evaluation of the audit evidence against the audit criteria leads to findings of conformity or nonconformity with the criteria, i.e. something does or does not conform to the applicable requirements.

After consideration of all the findings, the auditor can draw conclusions such as whether the management system of an organization does or does not conform to a management system standard.

These basic steps of gathering and selecting information and logical reasoning are shown in Figure 4 below.

Figure 4 – Basic steps in an audit process



Principles of auditing

ISO 19011 describes the principles of auditing that make audits different from other types of assessment, and that make them a reliable tool in support of management policies and controls, and in the provision of information to interested parties.

Three of these principles relate to the auditors themselves:

- **Ethical conduct** – *the foundation of professionalism*
- **Fair presentation** – *the obligation to report truthfully and accurately*
- **Due professional care** – *the application of diligence and judgment to auditing.*

Two further principles relate to the audit process:

- **Independence** – *the basis for the impartiality and objectivity of the audit conclusions*
- **Evidence** – *the rational basis for reaching reliable and reproducible audit conclusions in a systematic audit process.*

Adherence to these principles is a prerequisite for providing a reliable and relevant audit outcome and the remainder of the guidance given in ISO 19011 is therefore based on them.

Management of audit programmes

According to ISO 19011, an audit programme is *a set of one or more audits planned for a specific time frame and directed towards a specific purpose.* For many organizations, the audit programme will consist of the set of individual audits which are carried out to cover all elements of the management system in all parts of the organization during an audit cycle. The programme may also consist of the set of initial and surveillance audits carried out by a third party during the contractual period of a management system certificate of conformity. Management of an audit programme includes all relevant activities that are necessary to facilitate the conduct of individual audits, such as appropriate planning, providing resources (financial, human) and establishing procedures.

Figure 5 *(overleaf)* shows the various elements of an audit programme and the application of the Plan-Do-Check-Act cycle to it.

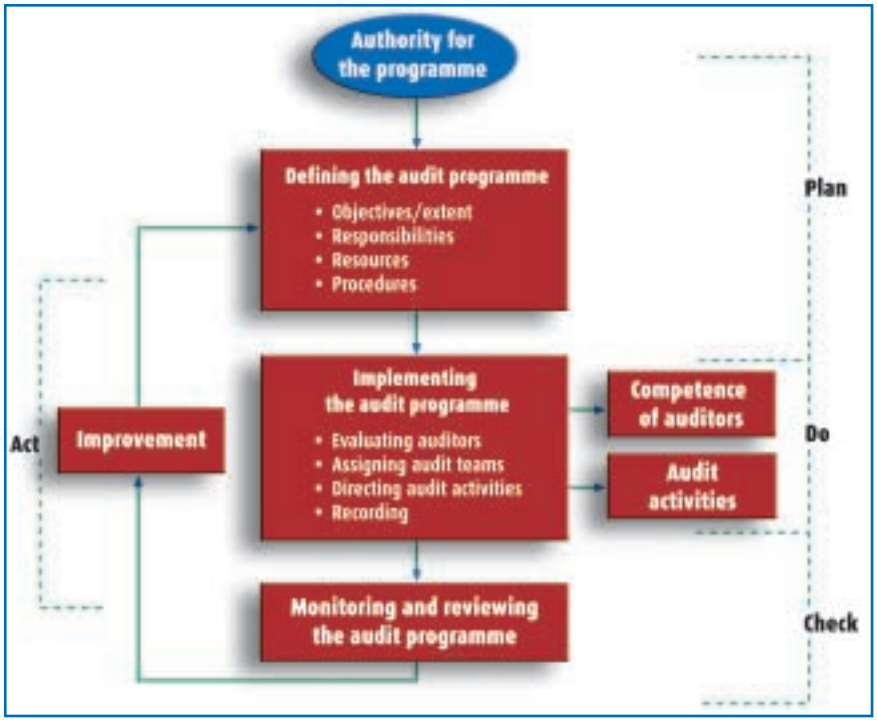


Figure 5 – Management of an audit programme

Conduct of audits

The guidance that ISO 19011 provides for the conduct of individual audits does not differ fundamentally from the guidance given in the current auditing standards.

Figure 6 below shows the parties involved in the conduct of an audit. In the ISO 10011 and ISO 14010 series the roles and responsibilities of each actor were described in detail. In ISO 19011, these roles and responsibilities are included in the description of the audit process.

The various stages in this audit process are given in Figure 7 on the next page and, for each element, ISO 19011 provides the necessary guidance.

Auditor competence

The most innovative part of ISO 19011 is the clause which addresses the competence of auditors. In ISO 10011-2, as well as in ISO 14012, the qualification criteria for auditors are defined in terms of minimum level of education and number of years of work experience and hours of auditor training and experience. In ISO 19011, the focus is on auditor competence: to be a competent auditor a person should demonstrate the possession of a number of personal attributes and the ability to apply the knowledge and skills that are necessary to conduct a successful audit and achieve the audit objectives. Knowledge and skills can be acquired by an appropriate combination of education, work experience and audit training and experience. This concept

Figure 6 – Parties involved in an audit

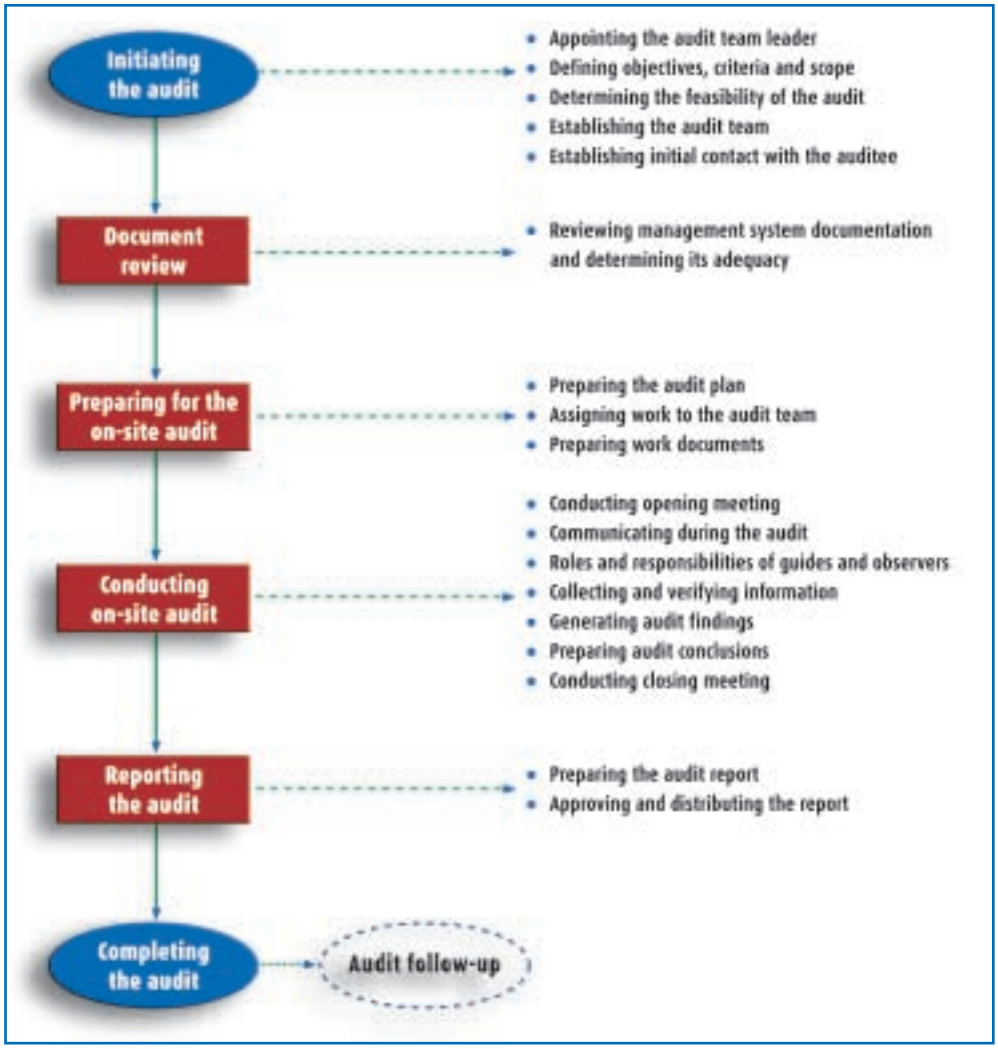


Figure 7 – Overview of audit activities

ISO 19011 can be used to conduct audits on either an environmental management system or a quality management system separately, or to conduct combined audits on both systems

Figure 8 – Auditor competence

of auditor competence is portrayed in Figure 8 opposite.

The knowledge and skills specified in ISO 19011 are subdivided into those that apply to all management system auditors, those that only apply to auditors of quality or environmental management systems and those that apply to audit team leaders.

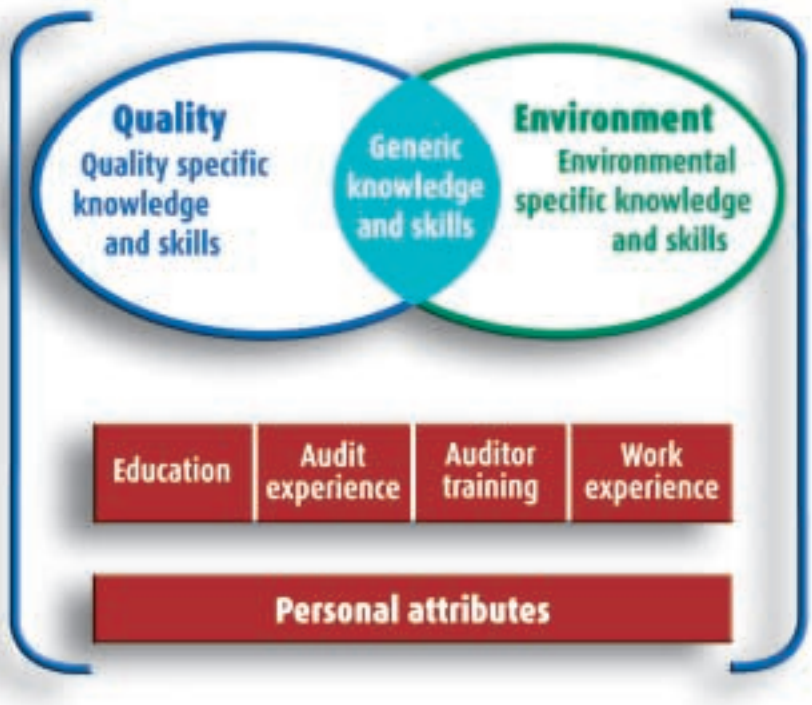
The generic knowledge and skills include those related to:

– audit principles, procedures and techniques;

– management systems and reference documents;

– organizational situations, and

– applicable laws, regulations and other relevant requirements.



Knowledge and skills specific to quality management system auditors are those related to:

– quality-related methods and techniques, and

– products, including services and operational processes.

Specific to environmental management system auditors are:

– environmental management methods and techniques;

– environmental science and technology, and

– technical and environmental aspects of operations.

As far as audit team leaders are concerned, ISO 19011 states that they should have the knowledge and leadership skills necessary to enable the team to conduct the audit efficiently and effectively.

In addition to the above, the auditor should posses a number of personal attributes that contribute to the successful performance of audits. According to ISO 19011, an auditor should be ethical, open minded, diplomatic, observant, perceptive, versatile, tenacious, decisive and self-reliant.

The necessary knowledge and skills and the personal attributes to apply them effectively can be acquired by an appropriate combination of education, work experience, auditor training and audit experience. In ISO 10011-2 and ISO 14012, these "building blocks" are quantified by, for example, specifying the minimum level of education, the necessary number of years' work experience and the minimum amount of audit experience.

ISO 19011 represents a first collaborative effort between two ISO 'communities' – quality and the environment – with their own history, culture and ways of interacting

The authors of ISO 19011, however, considered it not appropriate to set generic recommended levels that should apply to all auditors in all audit situations. It was acknowledged that the appropriate levels will vary according to such factors as the size, nature and complexity of the organization to be audited and the objectives and extent of the audit programme.

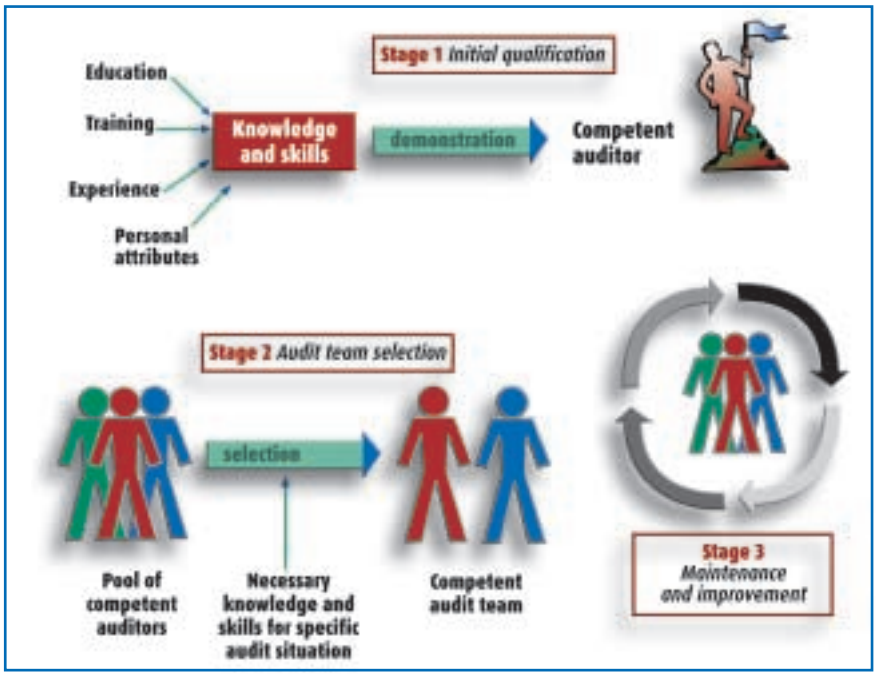
It is up to the organization to define the appropriate levels. Therefore, ISO 19011 clearly describes an auditor evaluation process that includes the setting of levels of knowledge and skills that are needed and the education, auditor training and work and audit experience necessary to acquire them.

Auditor evaluation

The evaluation of auditors occurs at different stages:

– an initial evaluation of persons who wish to become auditors within the framework of an audit programme (for example, the internal audit programme of a company, or

Figure 9 – Stages of auditor evaluation



the external audit programmes of a registration/certification organization);

– the evaluation of auditors as part of the selection of an audit team to conduct a specific audit within the audit programme, or

– the on-going evaluation of auditor performance in the audit programme to identify, for example, training needs to maintain and improve the necessary knowledge and skills.

These stages are represented in Figure 9 on the preceding page.

In each case, the evaluation process involves the following steps:

1. identification of the types and levels of knowledge and skills necessary to meet the needs;
2. setting of indicators of education, work experience, auditor training and audit experience to acquire the levels identified in step 1;
3. selection of the appropriate method to evaluate whether the indicators identified in step 2 are satisfied, and
4. completion of the evaluation by comparing the results for a person/auditor (by application of the selected method) against the indicators identified in step 2.

On completion of this process, persons/auditors identified as not meeting the criteria may need further education, training and/or experience.

The necessary knowledge and skills can vary for each stage. For example, a person may qualify as an auditor in the internal audit programme of a chemical company, but not qualify as member of a team to conduct a specific audit in a business unit with special hi-tech processes, unless supported by appropriate technical expertise.

As mentioned above, the required knowledge and skills will vary for each organization having the need to conduct audits and, as a consequence, the necessary education, auditor training and work and audit experience to acquire the competence will vary as well. However, ISO 19011 includes a table illustrating indicators of these "building blocks of competence" which are typical for auditors conducting certification audits

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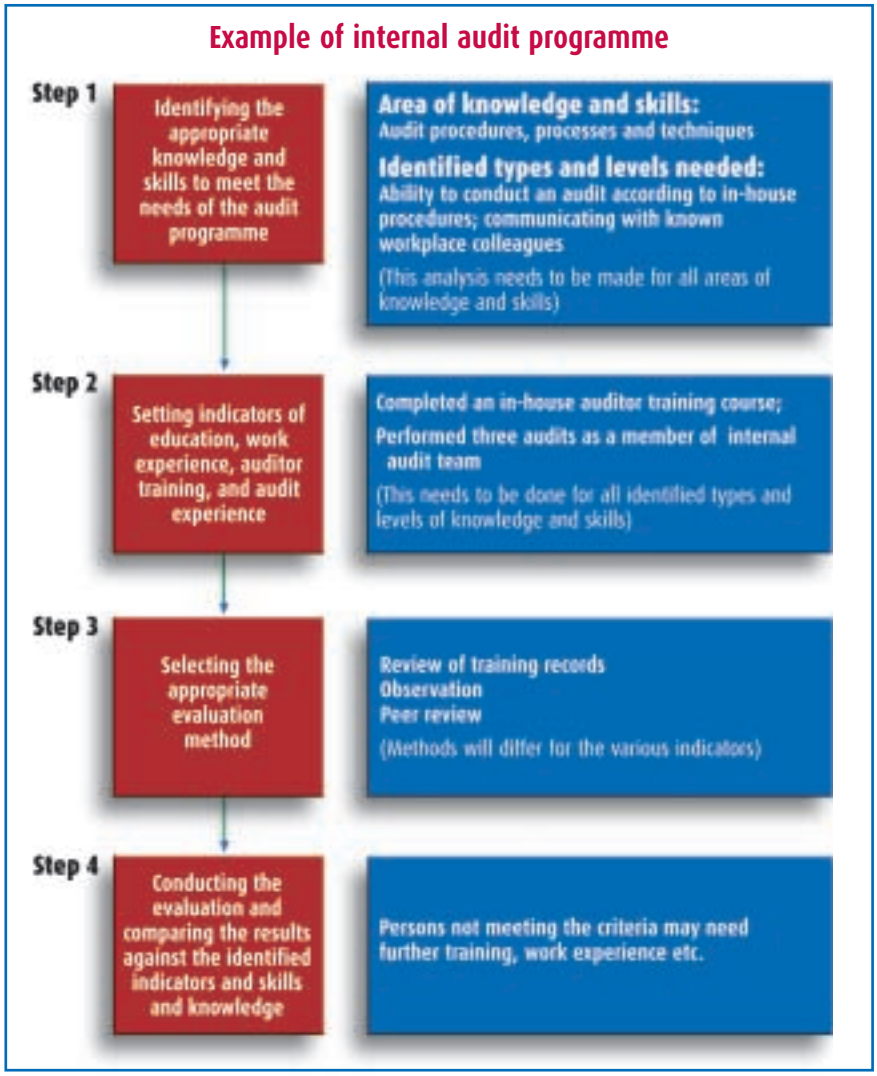

Figure 10 – Auditor evaluation process

which are typical for auditors conducting certification audits, or audits of similar complexity. ISO 19011 also includes a table with examples of the application of the auditor evaluation process in an internal audit programme.

Figure 10 on the preceding page represents the auditor evaluation process, as well as giving some examples of its application in an internal audit programme.

Quality and the environment are good partners and ISO 19011 is perhaps only the first project in a new series of ISO standards

Conclusion

After three Committee Drafts, ISO/DIS 19011 has clearly emerged as close to the final version of the ISO standard on management system auditing. The project is running smoothly and swiftly: from start to finish, it will take less than four years. On the one hand, it can be argued that good starting material was available, but, on the other hand, ISO 19011 represents a first collaborative effort between two ISO "communities" – quality and the environment – with their own history, culture and ways of interacting.

Regarding this last point, the spirit of cooperation and teamwork in the Joint Working Group is remarkable and, after seven meetings, it is hard to tell which member originates from the quality or environmental side. At the last meeting in Sydney, the JWG members were compared with the Australian platypus – a perfect combination of two rather distinct animals!

Quality and the environment are good partners and ISO 19011 is perhaps only the first project in a new series of ISO standards. The catalogue number ISO 19001 is still available for an ambitious new project...

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