

# Training as a vital tool to establish a Management System in a testing laboratory at the International Atomic Energy Agency

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## **Abstract**

The implementation of a management system into any organization is a combination of applying external knowledge and internal training. None of these actions can do the job alone, especially as training and the creation of information and knowledge in the participants to the management system is a powerful tool for motivation. Only motivated persons will carry the burden of creating a management system positively into operation and continuous improvement. This paper shows how training at different stages of the implementation process, applied to different groups acting within the process, facilitates the implementation process and creates a motivated work force that will, because of the created knowledge about the benefits, not only accept, but steadily improve the management system.

## **1. Introduction**

The creation and implementation of a management system into any organization can be described as applying knowledge in several steps to train the participants to the management system in recognizing their contribution to and their gain from the system.

This paper will show, giving the example of a recently established management system in a testing laboratory in the International Atomic Energy Agency (the Agency), how in each singular step the applied external knowledge is directly converted into an internal training event for the participants (staff members) of the system.

To demonstrate the necessary steps, figure 1 shows a flowchart of the approach taken to arrive at the final management system.

## **2. Start and kick-off meeting**

The decision to establish a management system will be based on experience, customer's requirements and some self study in the top management of an organization. Very seldom a formal training event is involved in the decision making, although there may be an external management expert included into the discussion.

As soon as top management has taken the decision to commit the organization to a management system and also to commit enough time and resources to the task, training is the next step.

It is a good investment to install an implementation team, which can devote most of its time, besides other tasks, to the creation of a management system. This team, preferably selected from higher management, needs to be trained in the knowledge of the possible standards to be applied and in the flow of working packages necessary to implement the system.

In the Agency a management system was installed into the "testing laboratory for radiation measurement, monitoring and protection". An implementation team, lead and motivated by the Section Head, consisting of the two responsible Unit Heads, one for individual monitoring, one for workplace monitoring, was built with the addition of an external expert. The different requirements of the standard ISO/IEC 17025, both for the managerial and the technical part, were discussed with the external expert giving advice and training to the other team members to interpret the requirements to the specifics of the organization.

Whenever the primary discussion and training of the implementation team has finished, it is time to have a kick-off meeting including all staff members that will operate the management system.

## **3. Start of system creation**

The next step of action should bring the knowledge about all processes operational in the organization and their special needs as defined by customers, laws, regulations and all involved stakeholders. Again a lot of training and coaching is needed to make staff aware of all their daily tasks and actions. It

might be necessary and helpful to bring in another external specialist for business organization to help defining the various processes, to see them in the necessary detail and to recognize the dependencies between different processes.

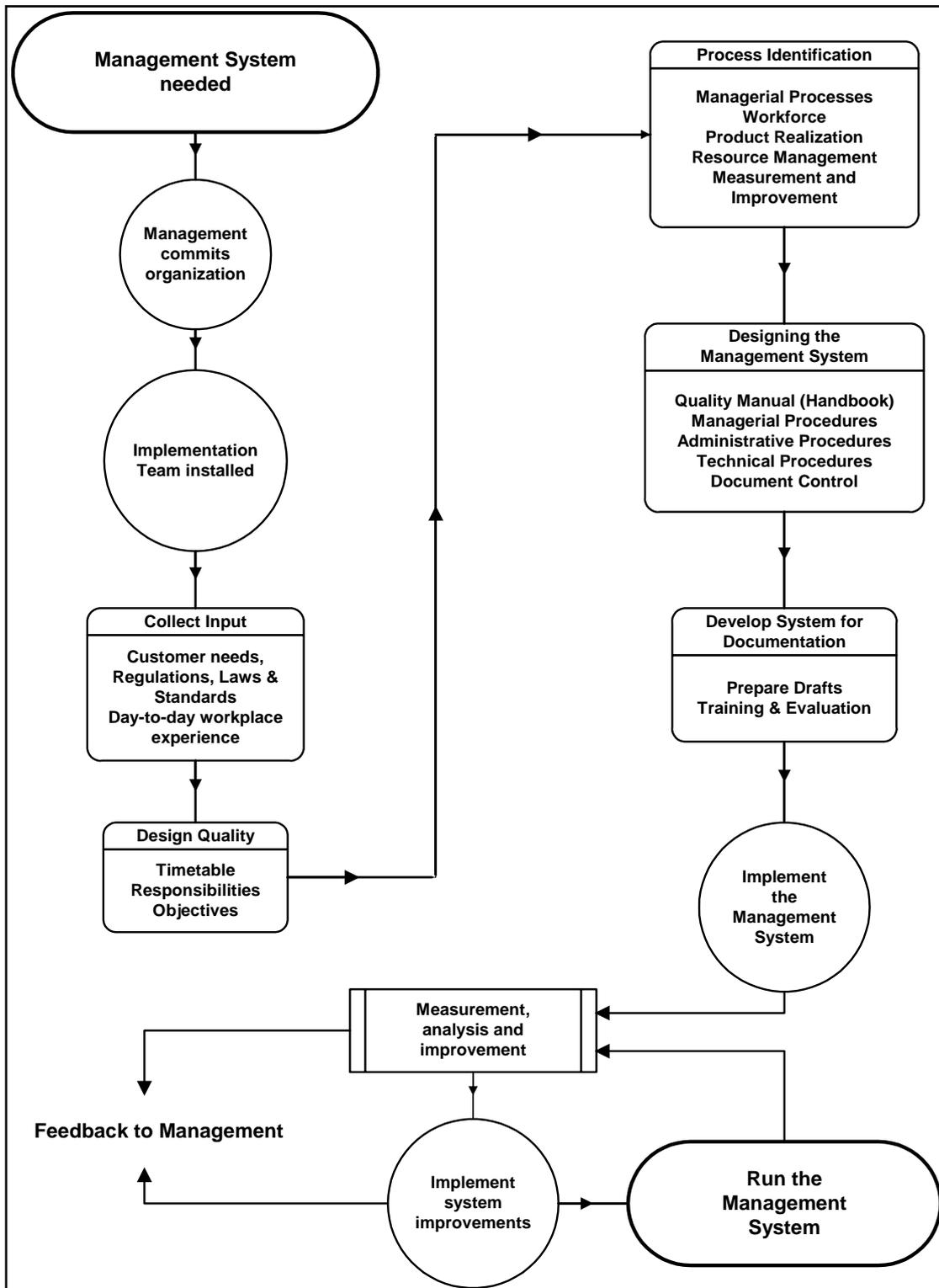


Figure 1 Flowchart to implement a Management System (QMS)

All processes recognized within this discussion/brainstorming phase will have to be documented to show compliance with the requirements of the standard used. It is of great importance for motivating all players to support the management system that everybody is documenting his/her own work to the extent that a technically trained, but in the process inexperienced person could do the work. In the Agency the creation of a management system was facilitated by the existence of a large amount of well documented processes. These, of course were mainly managerial processes dealing with such issues as personnel administration, procurement and financial regulations. Providing templates, guidance in procedure writing and continuous training in expressing the necessary details of each process, helped motivating staff members to document their work. All general applicable procedures both managerial and technical were drafted by the external expert in close cooperation with the Section Head and the two Unit Heads providing the special knowledge about the actual ways of running the processes. The expert also performed the check of all documents (procedures and working instructions) for compliance with the standard and for consistency within the management system. Establishing a management system documentation is an iterative process which will need many returns to the documents to improve their level of detail (either more or often less), readability and consistency with all other, especially higher order documents. Discussing the various steps of document adaptation within work groups knowledgeable to the same process can be an additional training in perceiving the specialities of the process work flow and may even lead to a certain streamlining of the process. A similar effect may come from any external (proof) reader of the documents, who may bring a broader overview into the discussion or introduce pointers to different solutions from other groups within the organization. In parallel to the creation of the process documentation, the description and documentation of work environment conditions, equipment and necessary calibration standards is an important task to create a management system. Special attention should be paid to the traceability of calibration and the possibility of estimating measurement result uncertainties.

#### **4. Implementation of the management system**

As soon as the management system documentation is finalized, authorized by top management and the contents of the process descriptions have been made generally known to staff by intensive training from the implementation team, the management system can be put into force.

At the same time the observation cycle for the system starts. Especially in the beginning there will be difficulties through the use of newly designed report sheets, additional documentation needs and more communication channels.

Efforts should be made to measure the effectiveness of the processes, some of which may be newly introduced or changed in their workflow. Equally staff should be trained to and kept aware of the possibility of changing process descriptions both in the managerial as well as in the technical part of the management system.

This awareness training will also help accept the outcome of any audit, which should be scheduled after a reasonable time of action under the auspices of the installed management system.

Audits should be aimed at finding improvement possibilities and should be conducted by well trained experts. It could be a good praxis to train experienced members of staff, known to be able to express their opinion in a discussion, to become internal auditors. Their knowledge of the organizational culture, the applicable standards and of the processes established in the organization will help harmonizing the management system through the audit.

Internal audits present one of the best training situations (they are not a good/bad examination) to propagate the philosophy and strategy of the management system within an organization.

Auditee	Scope of audit	ISO17025 chapter
Head of testing laboratory	Complaints, Internal Audits Management review	4.8, 4.13, 4.14
Quality Manager	Service to the client Control of Records Internal Audits Management Review	4.7, 4.12, 4.13, 4.14

*Table 1 Example of Internal Audit Plan*

During an audit a small group of staff including the respective management is typically focussed for approximately half a day on quality issues and the system on the whole. A well trained auditor may deliver a lot of training impulses during this time.

Finally the outcome of audits together with any other observations on quality, like customer feedback, improvement proposals and nonconformance observations, should be evaluated in a management review. The team to do the review will include top management representatives, the organizational management and the quality manager. Outcome of this meeting will be an assessment of the overall quality situation in the organization, quality goals and objectives and an action plan for necessary improvements. By implementing this plan the operating cycle of observation, measurements and actions starts again leading to permanent improvement of the management system.

In the Agency the implementation of the management system was supported by three internal audits during implementation time. In the first audit the participants to the management system were trained to the audit situation of questioning by the auditor, answering by the auditee and producing documental evidence to support the answer. The audit was conducted by the quality manager together with a professionally trained auditor of the in-house Office of Internal Oversight Services, who concentrated on managerial procedures.

The second audit was done by two trained internal auditors from different Departments of the Agency doing chemical and physical analysis. The quality manager this time acted to support the auditees especially in translating very specialized quality language into known vocabulary.

The third audit was performed by an external expert from the field of dosimetry. Again the quality manager acted as facilitator and supporter of the auditees.

Each audit was shortly followed by a management review meeting including Section Head and Unit Head and the quality manager to decide necessary actions to implement improvement possibilities found during the audit and in other sources.

Staff feedback introduced into the review meeting remarked positively the help through the management system documentation for newly recruited staff to gain knowledge on the methods, for experienced staff to have an easily accessible resource for data necessary to perform the measurements and calculations and for all to assess more easily training needs.

Finally the Agency built the experience gained by creating and implementing a management system into the own testing laboratory for radiation monitoring and protection together with inputs from external experts into a training package, which is available for all Member States.

**Training course on Implementation of a Management System  
for a Service Provider in Radiation Protection Monitoring**

Day 1	What is Quality Basic concepts of quality management available international standards Requirements for documentation
Day 2	Management Responsibility, Customer focus Quality policy, Quality objectives, Continuous improvement, Internal Audit, Management Review
Day 3	Nonconformity, Complaints Exercise : Development of a nonconformity treating procedure Development of methods
Day 4	Additional Technical Requirements for Accreditation Validation of methods, Traceability of results, Uncertainty estimation
Day 5	Test report requirements Summing up the course content

*Table 2 General layout of training package*

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