International Atomic Energy Agency

Requirements and Generic Guidance for Management System

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Andrei Kossilov
A.Kossilov@iaea.org

Terminology

Requirements and Generic Guidance for Management System

Building a Learning Organization

Terminology

Nuclear Knowledge Management
Draft Glossary of Terms
IAEA, July 2005

Knowledge

The mental constructs used in acquiring and understanding facts, and the application and reassembling of facts to think creatively, solve problems and make judgments. Together with Attitudes and Skills, Knowledge provides the full requirements to undertake a given job or task. Knowledge is sometimes termed Cognitive Ability.

Competence (Competency)

- (1) The ability to put skills, knowledge and attitudes into practice in order to perform activities or a job in an effective and efficient manner within an occupation or job position to identified standards.
- (2) A combination of knowledge, skills and attitudes in a particular field, which, when acquired, allows a person to perform a job or task to identified standards. Competence (Competency) may be developed through a combination of education, experience and training.

Practical definitions

- Knowledge = is the capacity for effective action.
- Competence = Knowledge+Skills+Attitude

Glossary Definitions

- ***Knowledge*: The acquiring, understanding and interpreting of information.**
- ***Explicit knowledge* is contained in documents, drawings, calculations, designs, databases, procedures and manuals.**
- ***Tacit knowledge* is held in a person's mind and has typically not been captured or transferred in any form (if it were, it would then become *explicit knowledge*).**

Glossary Definition

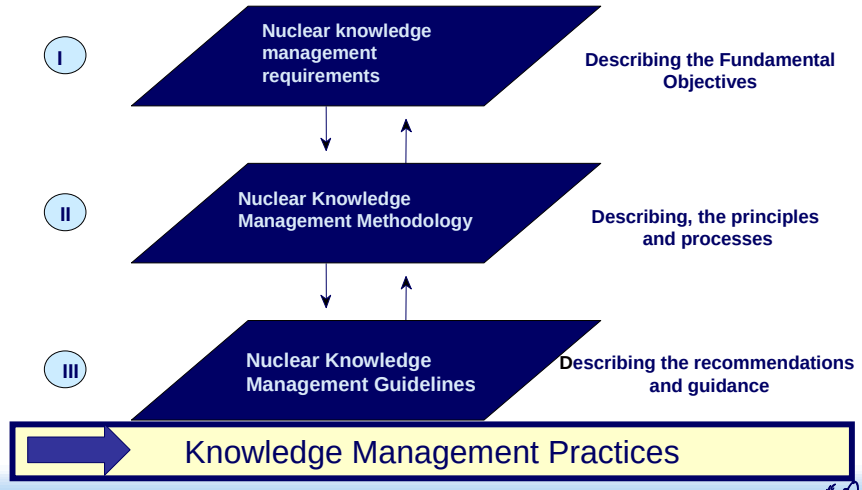
- ***Knowledge Management*: The integrated, systematic approach to identifying, managing and sharing an organisation's knowledge, and enabling persons to create new knowledge collectively and thereby help achieve the objectives of that organisation.**

Glossary Definition

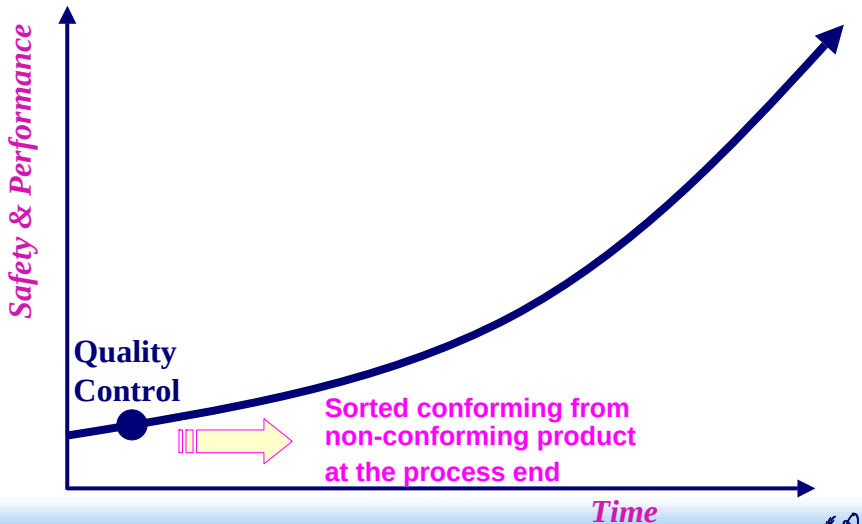
- ***Knowledge management strategy:*** **A detailed plan outlining how an organisation intends to implement knowledge management principles and practices in order to achieve organisational objectives.**

Requirements and Generic Guidance for Management System

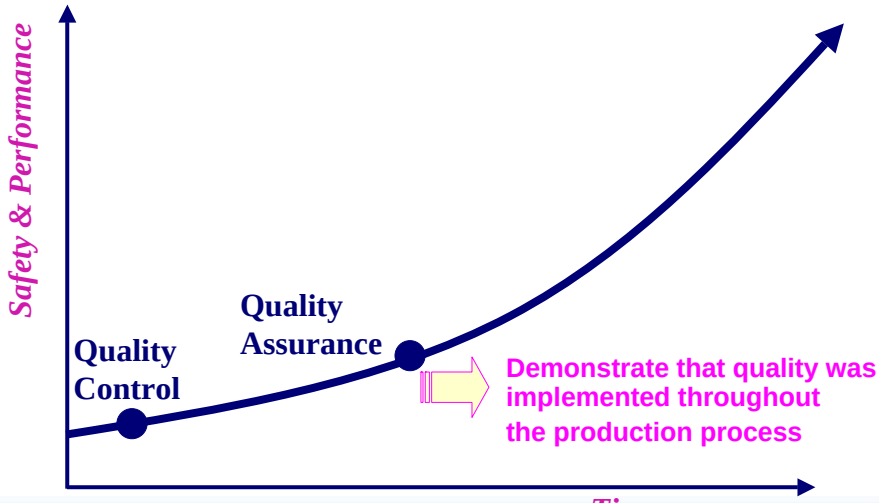
Requirements, Methodology and Guidance for Nuclear Knowledge management



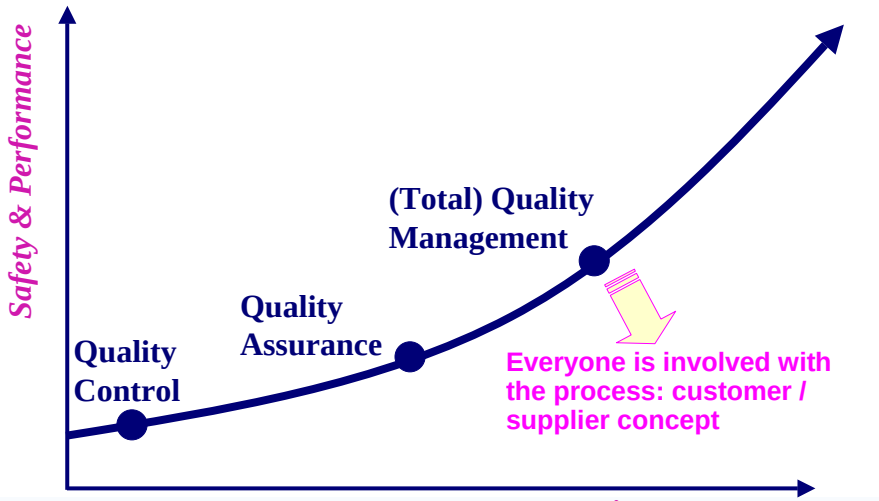
Evolution to Management Systems



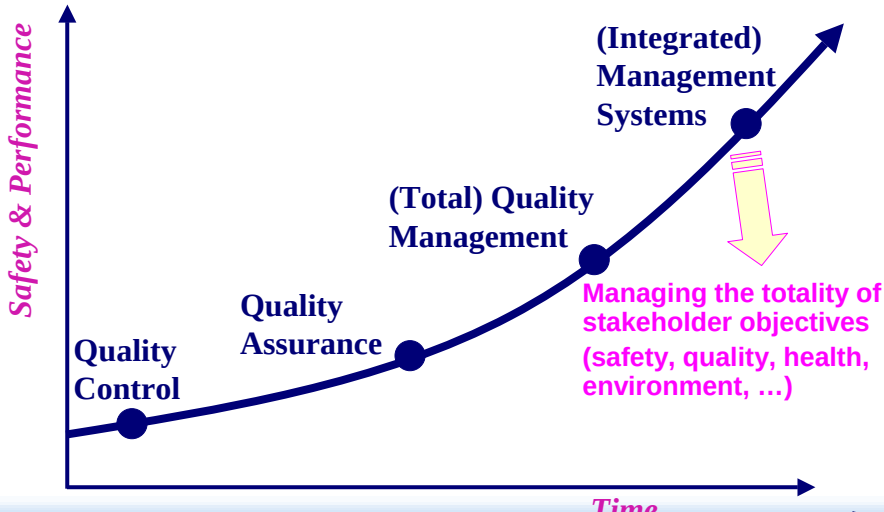
Evolution to Management Systems



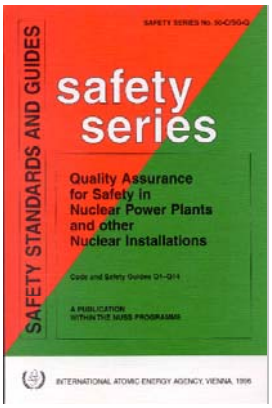
Evolution to Management Systems



Evolution to Management Systems



The IAEA is revising its current Safety Standards 50-C/SG-Q: QA Requirements and Safety Guides



- Published in 1996
- Promotes structure:
  - Management
  - Performance
  - Assessment
- Process approach

Reasons for revision

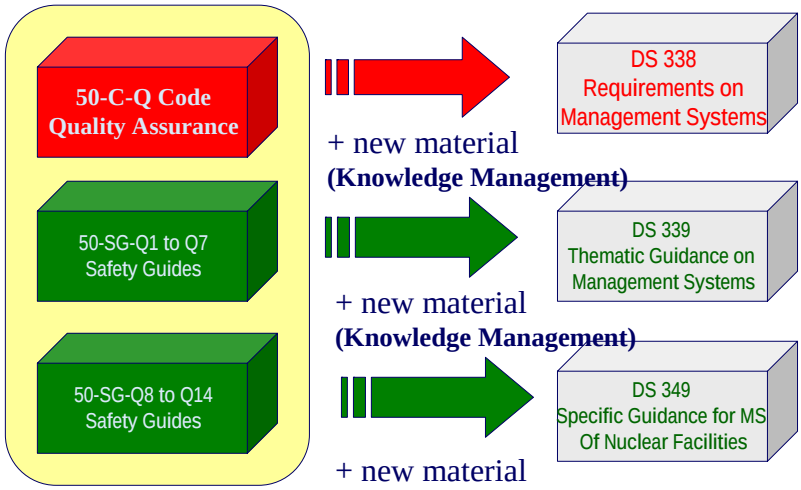
- Considerable new developments in the management system practices changes in the (Q) Management System Standards – ISO9001:2000
- Need to ensure that the new developments properly support and enhance safety
- IAEA/FORATOM Workshops highlighted the need to change – introduce the Integrated Management Systems concept
- New challenges
- Harmonization with ISO 9001:2000
- Comparison of IAEA 50-C/SG-Q and ISO9001:2000 documents standards on QA/QM

Development of the Safety Standards on Management Systems

- DS338 – Draft Standard. Safety Requirement: Management Systems
- DS339 – Management System Generic Guidance

IAEA source material for DS 338, DS 339 and DS349

SS 50-C/SG-Q (1996)



Safety Standards on Management Systems

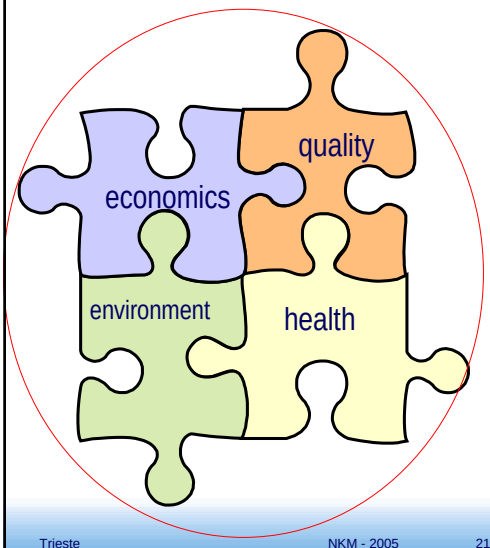
Integrated Management Systems

Consideration of requirements separately
may introduce a potential negative impact on safety

Therefore it is necessary to integrate all elements of managing nuclear facilities and activities to ensure that inter-related economic, health, quality and environmental matters are not considered separately to safety matters.

Safety Standards on Management Systems

Integrated Management Systems



This approach reduces the risk in the way the operator conducts its activities by strengthening operator awareness

*that **all processes, activities or actions** have the potential*

to create a negative impact on safety

Objectives of the Safety Standards on Management Systems

- **To enhance Member States capabilities to improve organizational performance in the nuclear area through the establishment and implementation of management systems that integrate safety, quality, environment, security and health management requirements.**

Safety Standards on Management Systems

Fundamental Principles

The prime responsibility for safety rests with the operator

The underlying fundamental principle for the Management System within the Safety Standard documents is to maintain and enhance safety

Safety Standards on Management Systems

Main features

- The structure follows the order and format of ISO 9001:2000
- Aligns the terminology with that in ISO 9000:2000
- Includes and strengthens where necessary all the applicable requirements of ISO 9001:2000 that could affect safety
- Includes additional clauses relevant to safety not covered by ISO 9001:2000 such as:
  - Grading of requirements
  - Independent verification
  - Knowledge Management
  - Safety Culture
  - Emergency Preparedness
  - Self-assessment...

Safety Standards on Management Systems

Experience

- Reflects developments in nuclear utilities towards integrated Management Systems that improve safety
  - UK, USA, Canada, Sweden, France, Hungary, China, ...
- Addresses current developments in quality and safety practices and standards and includes all known quality requirements for safety in national standards, such as 10 CFR –Part 50 Appendix B and other Member States national regulations

Safety Standards on Management Systems

Users

REGULATORS

- **basis for licensing requirement for Operators**
- **basis for their own Management Systems**

OPERATORS

- **basis for their Management Systems to discharge their prime responsibility for safety**
- **basis for the interaction with the other parties**

SUPPLIERS

- **basis for additional safety requirements in contracts**
- **basis for introduction of additional requirements into their management systems**

Information and Knowledge

- **The Management System shall promote and support nuclear knowledge management as a primary opportunity for achieving competitive advantage and maintaining high level of safety.**
- **This approach shall ensure that the organizations are able to demonstrate their long-term competitiveness and sustainability through actively managing their information and knowledge as a strategic resource supporting the establishment and maintenance of the organization performance.**

ORGANIZATIONAL POLICIES

Top managers shall develop the policy statements for the organization for subjects such as safety, health, environment, security, quality and knowledge management. The policy statements shall be appropriate to the facilities and activities of the organization.

DS 339: Management System Generic Guidance

- DS 339 provides guidance on **HOW TO** comply with the requirements in DS 338
- Includes all the current thematic guidance from 50-C/SG-Q
- Provides new guidance material on the following subjects:

- Management commitment
- Customer/stakeholder satisfaction
- Organizational policies
- Planning
- Communication
- Management review
- Managing organizational change
- Managing information and knowledge
- Provision of resources
- Human resources
- Infrastructure and work environment
- Developing processes
- Process management
- Control of measuring and test equipment
- Management self-assessment
- Self assessment
- Improvement

Managing Information and knowledge

- **The information and knowledge of the organization shall be managed as a resource.**
- **In order to manage information and knowledge, the organization should:**
  - **Identify and access internal and external sources of information;**
  - **Convert information to knowledge of use to the organization;**
  - **Use the data, information and knowledge to set and meet its strategies and objectives;**
  - **Ensure appropriate security and confidentiality;**
  - **Identify its information needs;**
  - **Evaluate the benefits derived from use of the information in order to improve managing information and knowledge;**
  - **Ensure preservation of organizational knowledge, including the capture of tacit knowledge and its appropriate conversion to explicit knowledge.**

Important Annexes

- Record Storage Media
- Record Retention and Storage
- Electronic Document management System

Annexes provide illustrative examples

Building a Learning Organization

Meaning

Management

Measurement

What Is a Learning Organization?

A learning organization is an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights.

Building Blocks

1. **Systematic problem solving**
   - Relying on the scientific methods, rather than guess-work for diagnosing problems
   - Insisting on data, rather than assuptions
   - Using tools to organize data
2. **Experimentation**
   - Systematic searching for and testing of new knowledge
   - Ongoing projects
   - Demonstration project

Building Blocks

3. Learning from past experience
   - Review the successes and failures
4. Learning from others
   - Benchmarking
   - Identification of the best –practice organizations
5. Transferring knowledge
   - Quick and efficient
   - Variety of mechanisms

Measuring Learning

- If you can't measure it, you can't manage it.
- Learning can be traced through:
  - Step 1- cognitive: Employees begin to think differently
  - Step 2- behavioral: Employees begin to internalize new insides
  - Step 3- performance improvement

First Steps

- Learning organizations are not built overnight
- Development of learning environment
- Top management involvement
- Training in core learning skills
- Open up boundaries and stimulate the exchange of ideas
- Learning forums

Final comments

- We can identify requirements and point to problems; the job of building is still ahead.
- To innovate successfully, you must hire, work with, and promote people who are unlike you.
- Until senior managers become aware of the ways they reason defensively, any change activity is likely to be just a fad.