IAEA
International Atomic Energy Agency
Atoms for Peace and Development

APPLICATION OF MANAGEMENT SYSTEM FOR ENVIRONMENTAL IMPACT ASSESSMENT ACTIVITIES

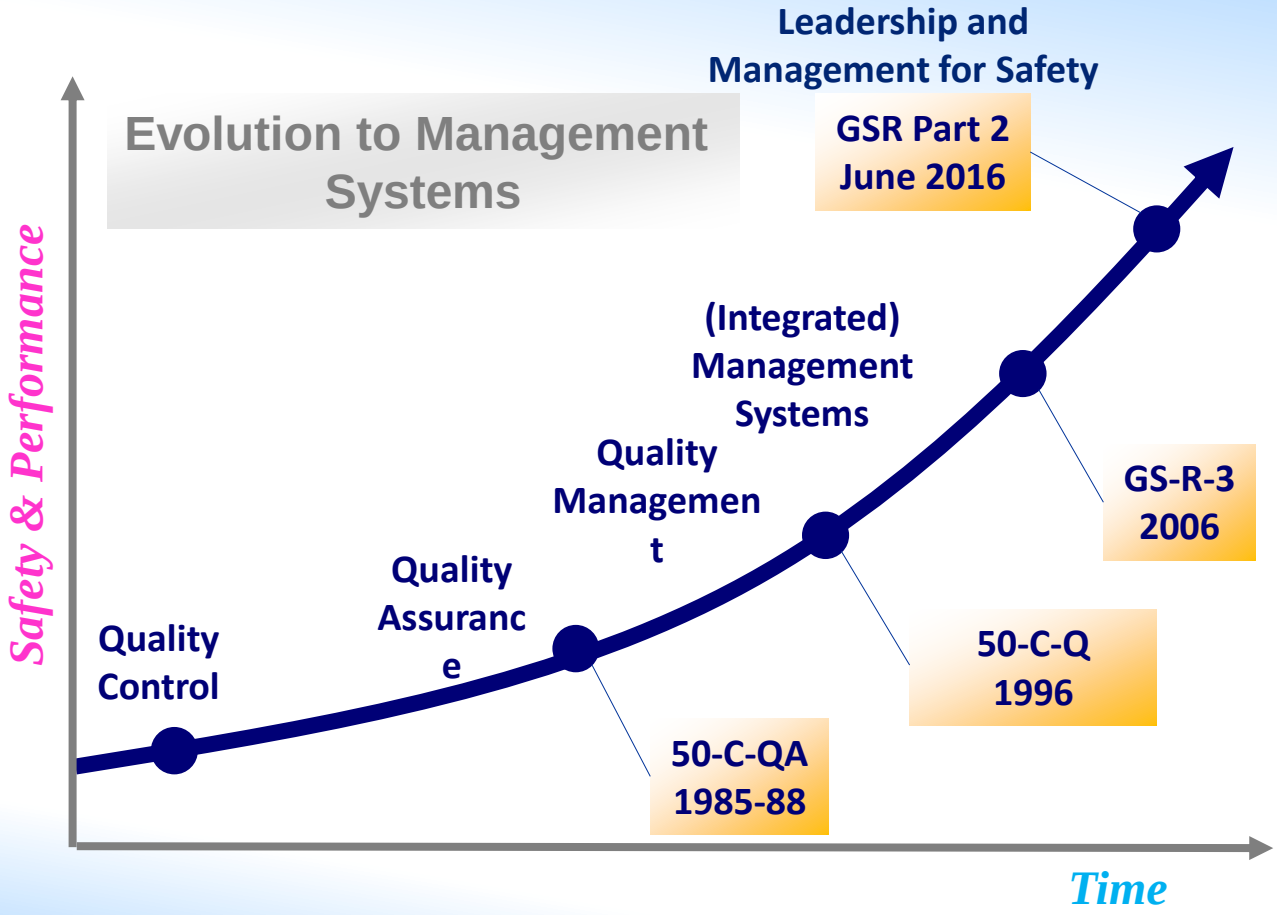
Asian Nuclear Safety Network (ANSN)
Regional Workshop on Radiological Environmental Impact Assessment for Nuclear Installations
Hosted by the Government of the Philippines through the Philippine Nuclear Research Institute (PNRI)
Manila, Philippines, 24–28 October 2022

Ayhan Altinyollar
EESS
IAEA

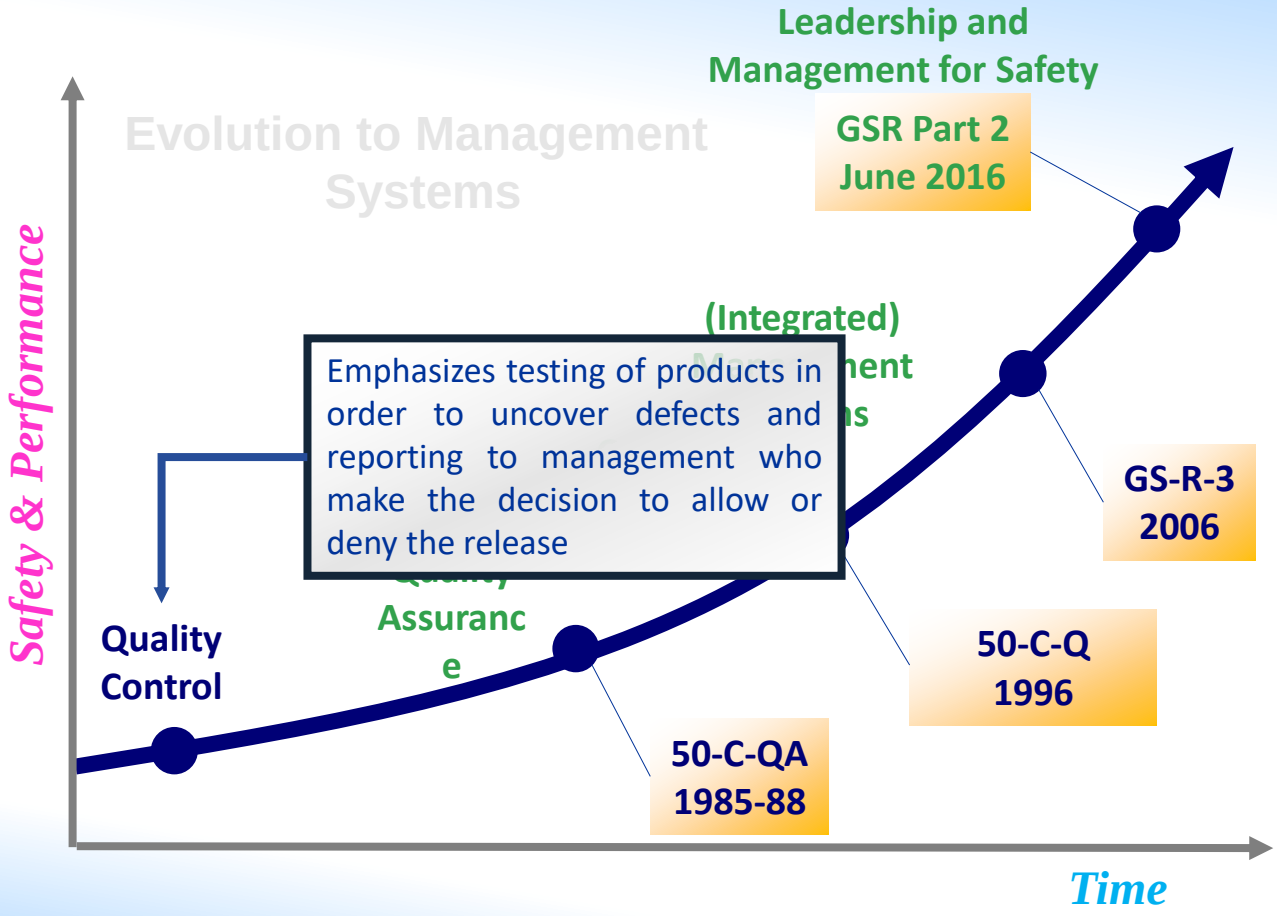
Outline

- Introduction
- IAEA General Safety Standard, GSR Part 2: Leadership and Management for Safety
- Management System Model
- The documentation of the management system
- Management of processes and activities
- IAEA Safety Standard No. SSR-1, Site Evaluation for Nuclear Installation
- Application of Management System for EIA (DS529 – Section 12.)
- Final remarks

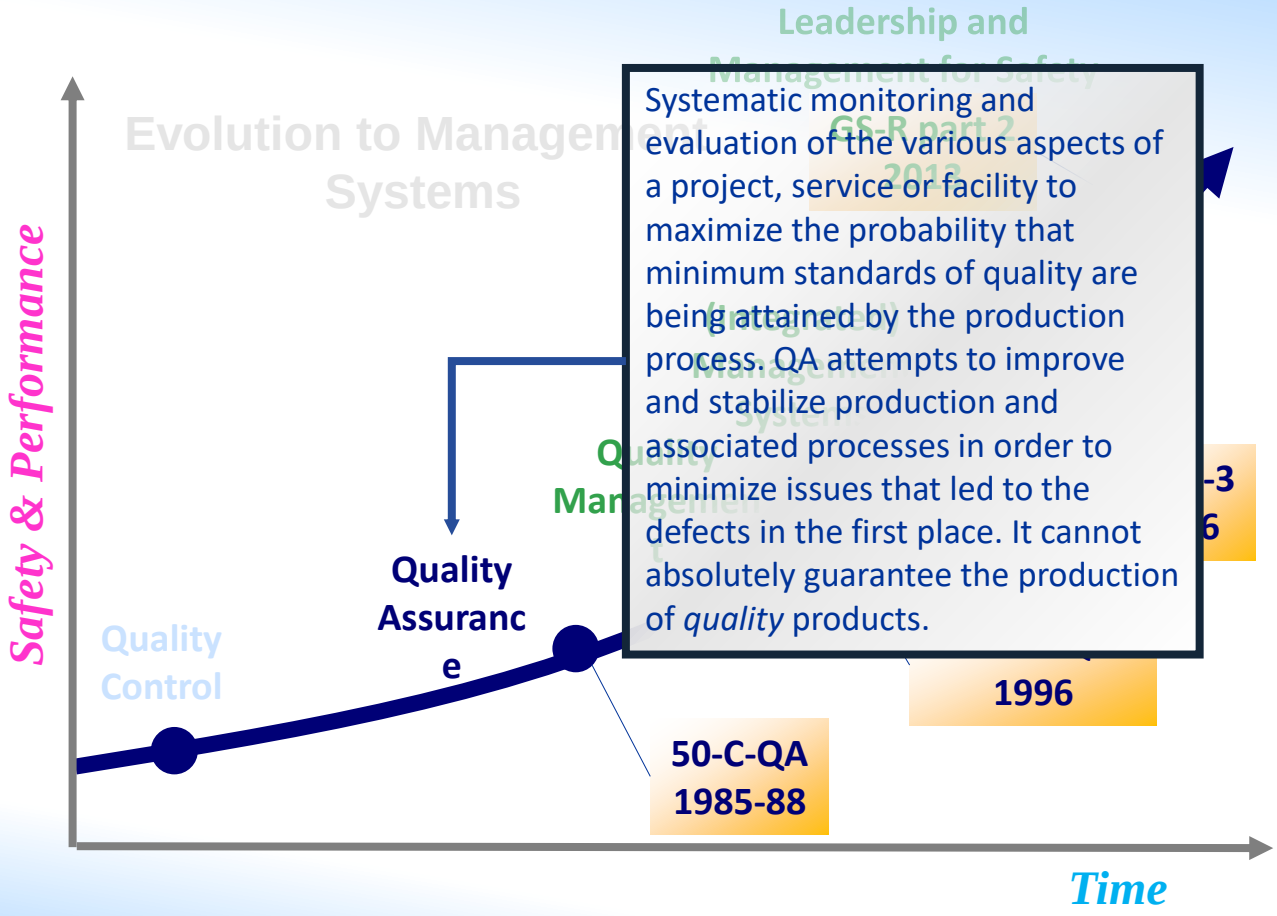
Introduction



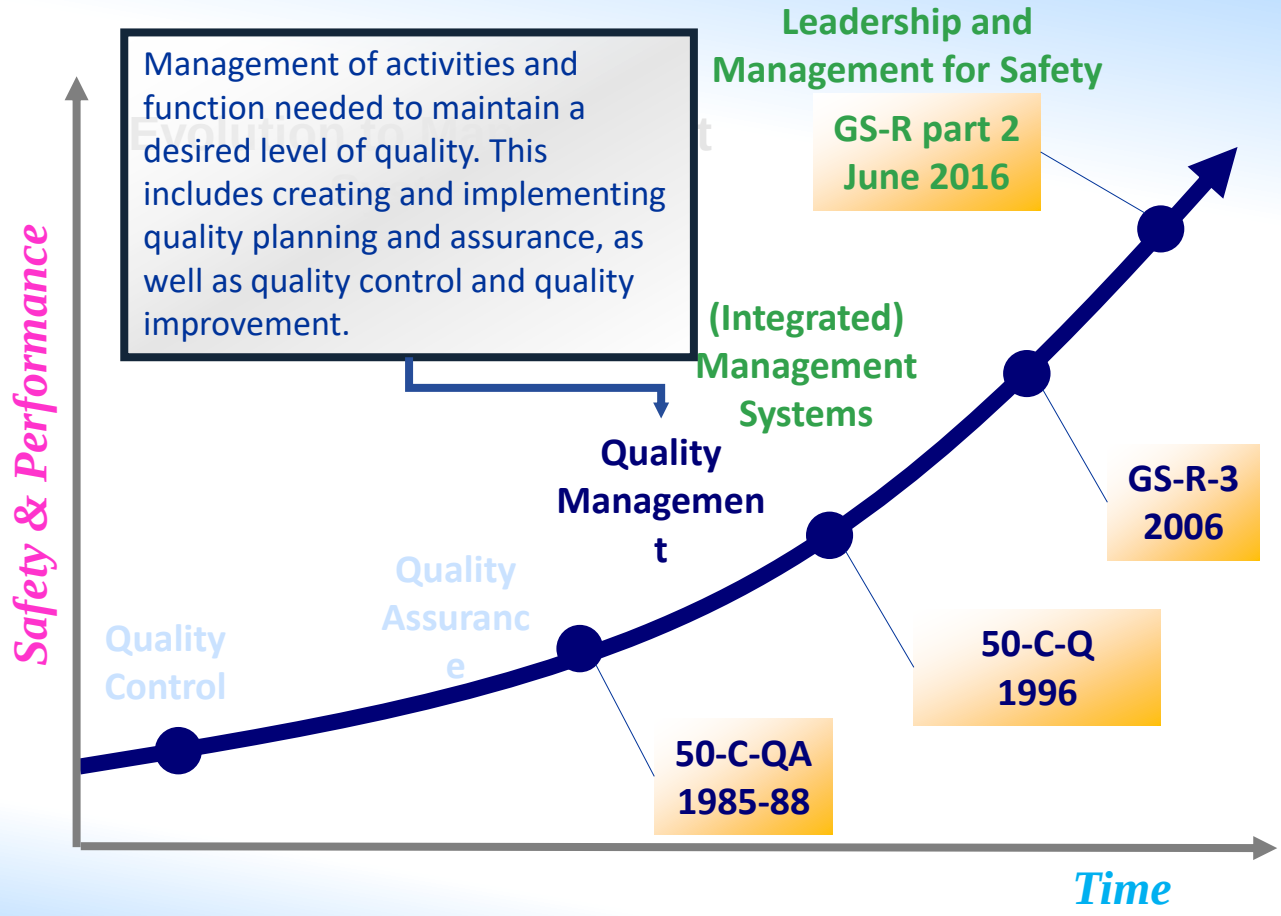
Introduction



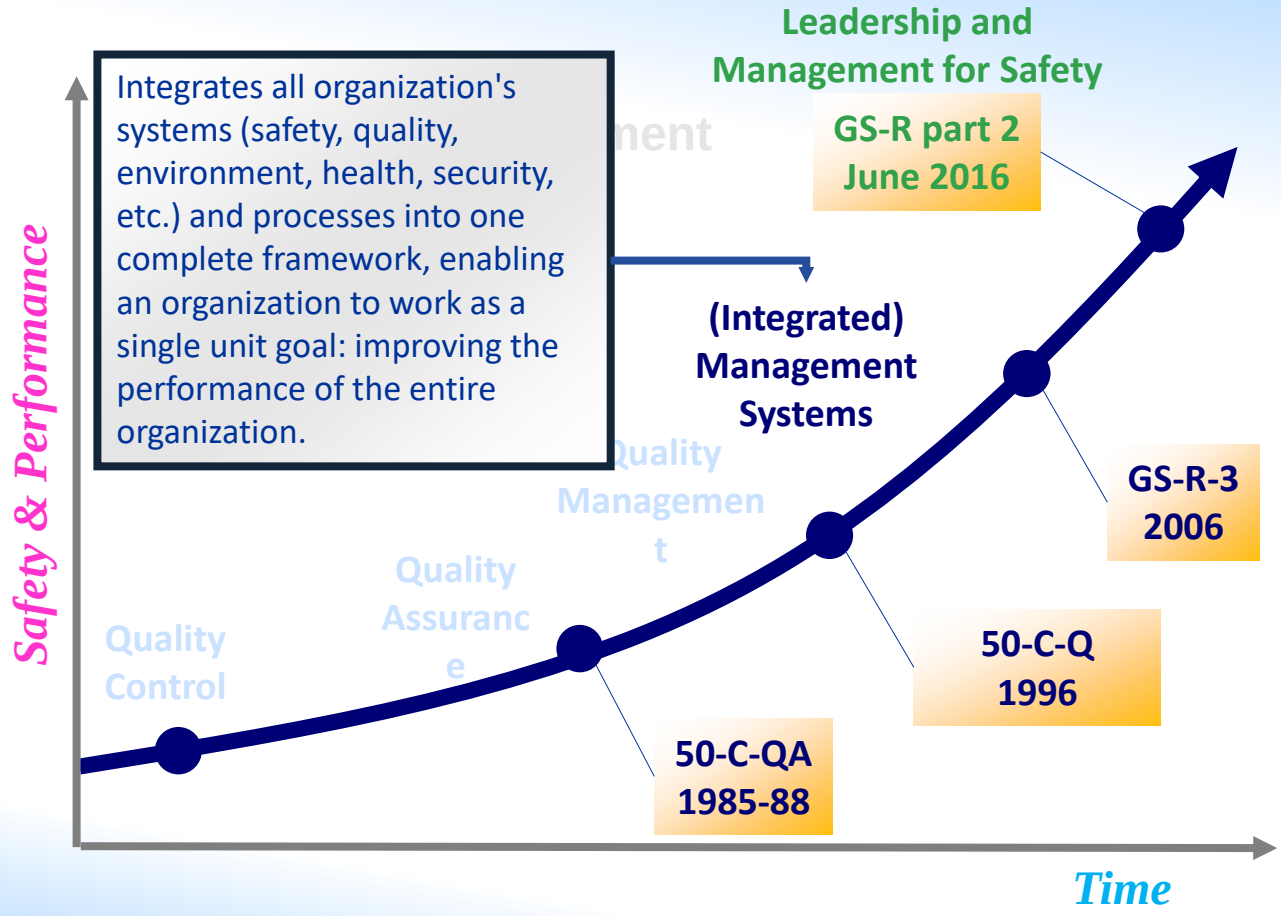
Introduction



Introduction



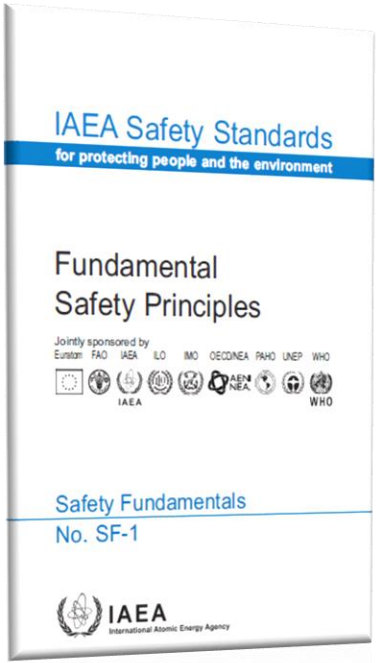
Introduction



Introduction

Leadership for safety: by establishing and integrating the organization's vision, goals, strategies, plans and objectives. Management for safety: this includes establishing and applying an effective management system

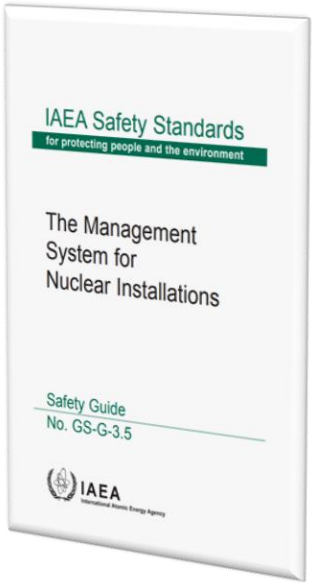
Introduction

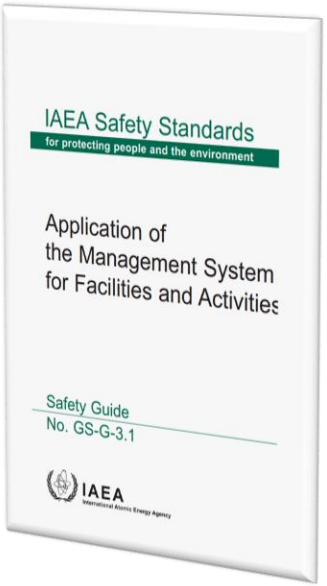


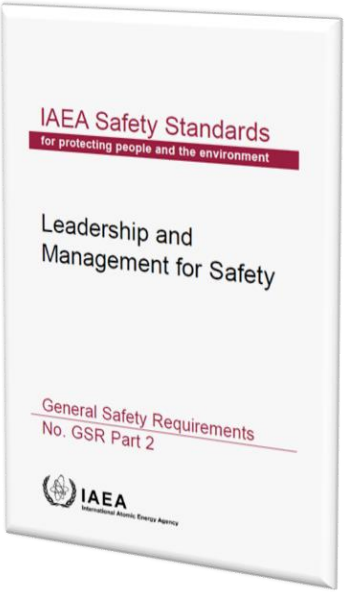
Principle 3: Effective Leadership and Management for Safety

Effective leadership and management for safety must be established and sustained in organizations concerned with, and facilities and activities that give rise to, radiation risks.

Introduction





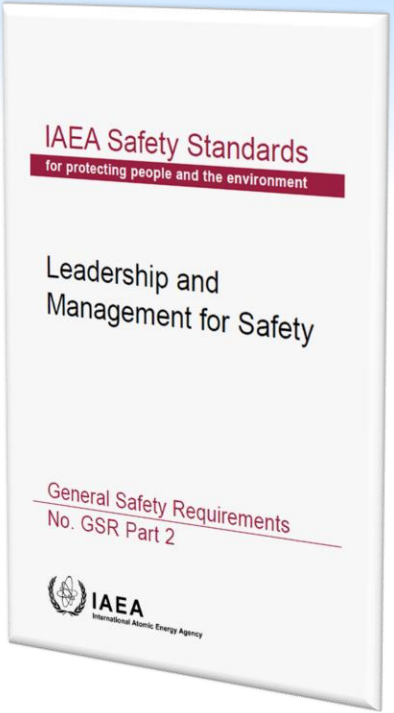


Under development:

DS513, Leadership, Management and Culture for Safety

GSR Part 2: Leadership and Management for Safety

1. Introduction
2. Responsibility for Safety
   - R1: Achieving the fundamental safety objective
3. Leadership for Safety
   - R2: Demonstration of leadership for safety by managers
4. Management for Safety
   - Responsibility for integration of safety into the management system
   - R3: Responsibility of senior management for the management system
   - R4: Goals, strategies, plans and objectives
   - R5: Interaction with interested parties
   - The management system
   - R6: Integration of the management system
   - R7: Application of the graded approach to the management system
   - R8: Documentation of the management system
   - Management of resources
   - R9: Provision of resources
   - Management of processes and activities
   - R10: Management of processes and activities
   - R11: Management of the supply chain
5. Culture for safety
   - R:12: Fostering a culture for safety
6. Measurement, Assessment and Improvement
   - R13: Measurement, assessment and improvement of the management
   - R:14 System Measurement, assessment and improvement of leadership for safety and of safety culture



GSR Part 2: Leadership and Management for Safety

The management system is a set of interrelated or interacting elements that establishes policies and objectives, and which enables those objectives to be achieved in a safe, efficient and effective manner.

The management system shall integrate its elements, including safety, health, environmental, security, quality, human-and-organizational-factor, societal and economic elements, so that safety is not compromised.

GSR Part 2: Leadership and Management for Safety

Two key concepts:

Work may be structured and interpreted as a set of interacting processes;

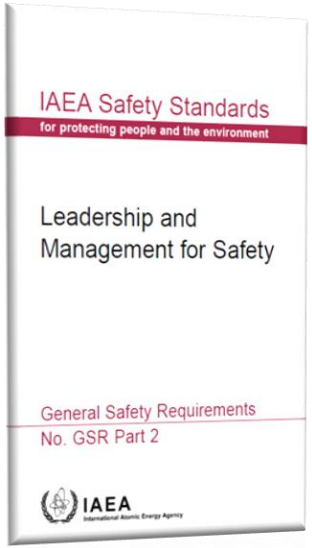
All individuals involved contribute to achieving safety and quality objectives.

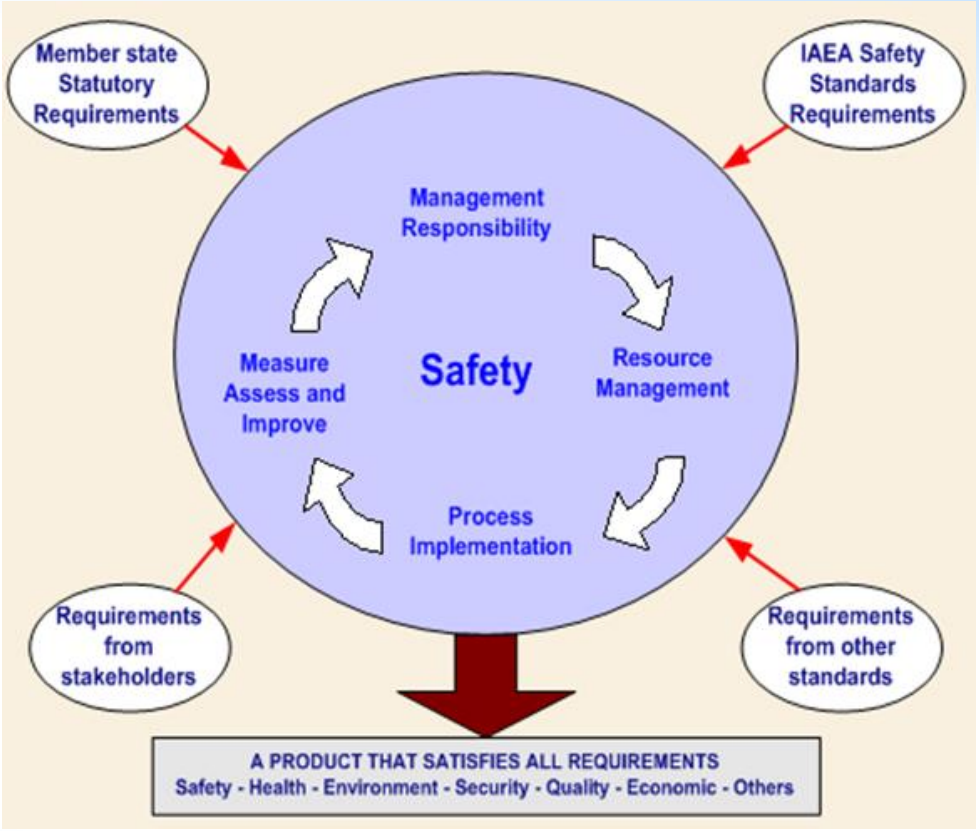
GSR Part 2: Leadership and Management for Safety

Users

- Licensees
  - basis for their Management Systems to discharge their prime responsibility for safety
  - basis for the interaction with the other parties
- Regulatory Bodies
  - basis for licensing requirement for Operators
  - basis for their own Management Systems
- Suppliers of Items and Services
  - basis for additional safety requirements in contracts
  - basis for introduction of additional requirements into their management systems

Management System Model





Safety shall not be compromised by other priorities.

Management System

Requirement 3: Senior management shall be responsible for establishing, applying, sustaining and continuously improving a management system to ensure safety.

Requirement 7: The management system shall be developed and applied using a graded approach.

The documentation of the management system

Requirement 8: The management system shall be documented. The documentation of the management system shall be controlled, usable, readable, clearly identified and readily available at the point of use.

The documentation of the management system shall include as a minimum:

- policy statements of the organization on values and behavioral expectations;
- the fundamental safety objective;
- a description of the organization and its structure;
- a description of the responsibilities and accountabilities;
- the levels of authority, including all interactions of those managing, performing and assessing work and including all processes;
- a description of how the management system complies with regulatory requirements that apply to the organization;
- a description of the interactions with external organizations and with interested parties

Management of processes and activities

Requirement 10: Processes and activities shall be developed and shall be effectively managed to achieve the organization's goals without compromising safety.

- There are always processes in place in an organization.
- The initial approach should be to identify, develop and manage them in the most appropriate way.
- No single 'process catalogue' — listing of processes that should be documented – can apply to every organization.
- Each organization should determine which processes are to be documented, on the basis of applicable regulatory and statutory safety requirements, the nature of the organization's activities and its overall strategy.

Management of processes and activities

Appropriate methods should be used to document processes, such as graphical representations, written instructions, checklists, flow charts, methods using visual media and electronic methods.

At the technical level the process may be better described in a procedure or instruction.

it may be beneficial to structure the processes as:

- Core processes, the output of which is critical to the success of the facility or activity;
- Supporting processes, which provide the infrastructure necessary for the core processes (e.g. procurement training);
- Management processes, which ensure the operation of the entire management system.

Management of processes and activities

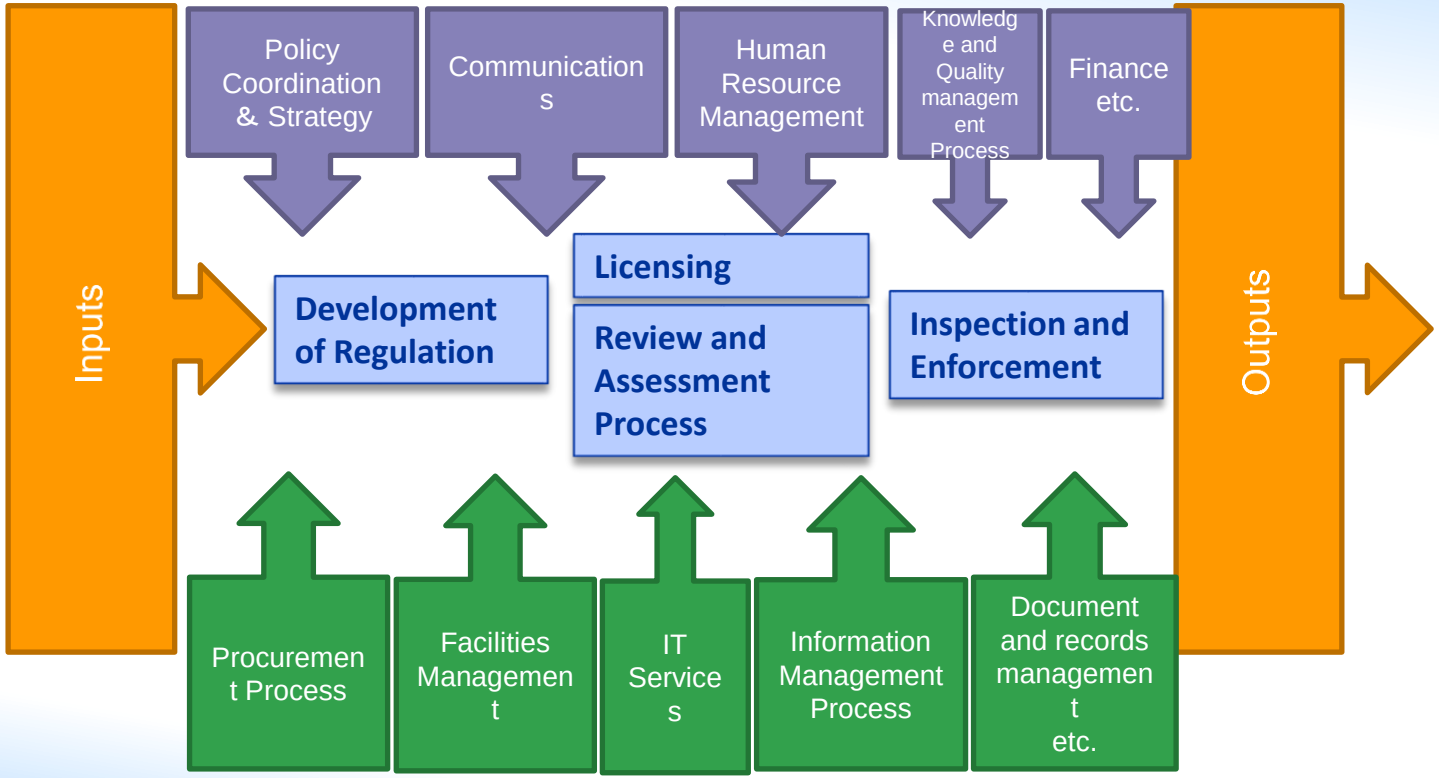
For each process, the following activities should be performed:

- Selecting a process team, made up of the team leader (normally the process owner), the team itself (representatives from the departments that are affected) and a facilitator;
- Developing a description of the process;
- Identifying the major inputs and outputs and the interested parties;
- Developing a flow chart for the process that incorporates the relevant expectations and identifies related documentation.

Process responsibilities

- The designated individual who has the authority and responsibility for each process is often referred to as the process owner.

Example: Organization Process Map



Comparison between IAEA GS-R-3 and ISO 9001:2008

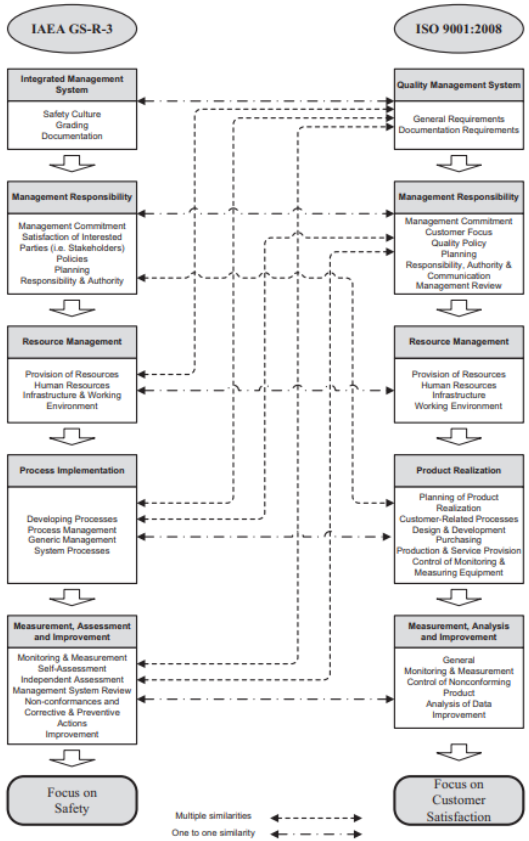
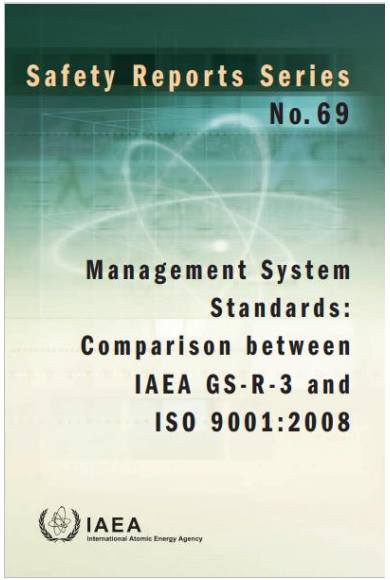


FIG. 2. Differences of focus and similarities of structure between IAEA GS-R-3 and ISO 9001:2008.



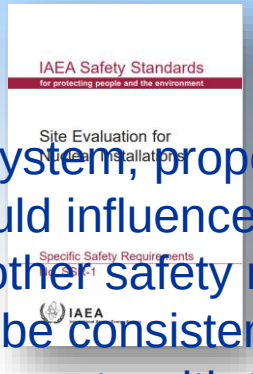
SSR-1: Safety Requirements

Requirement 2: Application of the management system for site evaluation

Site evaluation shall be conducted in a comprehensive, systematic, planned and documented manner in accordance with a management system.

3.1. An integrated management system that meets the requirements of IAEA Safety Standards Series No. GSR Part 2, Leadership and Management for Safety [12] shall be established. The management system shall cover the organization, planning, work control, verification and documentation of activities and qualification and training of personnel to ensure that the required quality of the work is achieved at each stage of site evaluation. The management system shall be implemented at the earliest possible time in the conduct of site evaluation for the nuclear installation.

SSR-1: Safety Requirements



3.2. Site evaluation shall include, as part of the management system, proper quality assurance arrangements covering each activity that could influence safety or affect the derivation of site specific design parameters and other safety related site characteristics. The quality assurance arrangements shall be consistent with regulatory requirements and their application shall be commensurate with the importance of the activity under consideration to safety.

3.3. For each site evaluation activity, including inspection, testing, verification and validation, the acceptance criteria and the responsibilities for performing the activity shall be specified.

3.4. The results of studies and investigations conducted as part of the site evaluation shall be documented in sufficient detail to permit an independent review.

3.5. An independent review shall be made of the evaluation of the natural and human induced external hazards and the site specific design parameters, and of the evaluation of the potential radiological impact of the nuclear installation on people and the environment.

DS 529 – Section 12 – Application of Management System

The management system to be established, applied and maintained as required by IAEA Safety Standards Series No. GSR Part 2, Leadership and Management for Safety […], should be implemented for the activities that are performed for the investigation of site characteristics and evaluation of radiation risks to the public and the environment in site evaluation for nuclear installations.

DS 529 – Section 12 – Aspects of Project Management

- A project work plan should be established that, at a minimum, addresses the following topic:
  - The objectives and scope of the project;
  - Applicable regulations and standards;
  - Organization of the roles and responsibilities for management of the project;
  - Work breakdown, processes and tasks, schedule and milestones;
  - Interfaces among the different types of tasks (e.g. data collection tasks, analysis tasks etc.) and disciplines involved, especially the various specialists required for the different aspects of site characteristics and evaluation of radiation risks to the public and the environment with all necessary inputs and outputs;
  - Project deliverables and reporting.

DS 529 – Section 12 – Aspects of Project Management

- The project scope should identify all aspects of investigation of site characteristics and evaluation of radiation risks that are relevant for the impact of the nuclear installation on environment and public and that will be investigated within the framework of the project.
- The project work plan should include a description of all requirements that are relevant for the project, including applicable regulatory requirements in relation to investigation of site characteristics and evaluation of radiation risks to the public and the environment that should be considered to be within the project scope. The applicability of the set of regulatory requirements should be reviewed by the regulatory body prior to conducting the project activities.
- All approaches and methodologies that reference lower tier legislation (e.g. regulatory guidance documents, industry codes and standards) should be clearly identified and described. The details of the approaches and methodologies to be used should be clearly stated in the project work plan.

DS 529 – Section 12 – Aspects of Project Management

At least the following generic management system process should be applied to ensure quality of the project: document control, control of products, controls for measuring and testing equipment, control of records, control of analyses, purchasing (procurement), validation and verification of software, audits (self-assessment, independent assessments and review), control of non-conformances, corrective actions and preventive actions […..]. Processes covering field investigations, laboratory testing, data collection, and analysis and evaluation of observed data should be applied. Communication processes for the interaction among the experts involved in the project should be also applied.

The project work plan should ensure that there is adequate provision, in the resources and in the schedule, for collecting new data and/or analysis that might be important for the conduct of investigation of the site characteristics and evaluation of radiation risks to the public and the environment.

DS 529 – Section 12 – Aspects of Project Management

- To make the investigation of the site characteristics and evaluation of radiation risks to the public and the environment traceable and transparent to users (e.g. peer reviewers, the operating organization, the regulatory body), the documentation for the analysis should provide a description of all elements of the process and include the following information:
  (a) Description of the study participants and their roles;
  (b) Background material that comprises the data collection tasks, analysis documentation,
  (c) A description of the computer software used, and input and output files;
  (d) Reference documents;
  (e) All documents supporting the treatment of uncertainties, opinion and related discussions;
  (f) Results of intermediate calculations and sensitivity studies.

DS 529 – Section 12 – Aspects of Project Management

- This documentation should be maintained in an accessible, usable and auditable form by the operating organization.
- The documentation and references should identify all sources of information used in the investigation of the site characteristics and evaluation of radiation risks to the public and the environment, including information on where to find important citations that might be difficult to obtain.

DS 529 – Section 12 – Engineering Uses and Output Specification

- Investigation of the site characteristics and evaluation of radiation risks to the public and the environment are conducted to develop the site evaluation report and environmental impact assessment report. From the beginning, the work plan for investigation of the site characteristics and evaluation of radiation risks to the public and the environment should identify the intended engineering uses and objectives of the assessment and should incorporate an output specification that describes all the results necessary for the intended engineering uses and objectives of the study.

DS 529 – Section 12 –Independent Peer Review

- An independent peer review should be conducted and implemented to provide assurance that: (i) a proper process has been duly followed in conducting the investigation of the site characteristics and evaluation of radiation risks to the public and the environment, (ii) the analysis has addressed and evaluated the involved uncertainties, and (iii) that the documentation is complete and traceable.

DS 529 – Section 12 –Independent Peer Review

- The independent peer review team members should include the multidisciplinary expertise to address all technical and process related aspects of the investigation of the site characteristics and evaluation of radiation risks to the public and the environment. The peer reviewer(s) should not have been involved in other aspects of the project and should not have a vested interest in the outcome.
- Two methods of peer review should be used: participatory peer review and late stage peer review. A participatory peer review is carried out during the assessment, allowing the reviewer(s) to resolve comments. A late stage (follow-up) peer review is carried out towards the end of the assessment. Participatory peer review will decrease the likelihood of the assessment being found unsuitable at a late stage.

Final Remarks

- The management system shall be developed and applied for the organization activities. Senior management shall be responsible for establishing, applying, sustaining and continuously improving a management system to ensure safety.
- Processes shall be developed.
- The management system shall be documented.
- Management system should be applied for EIA.

IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Thank you!
Questions?

A.Altinyollar@iaea.org