



Webinar # 4

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes

29 August 2023

Webinar Series on Nuclear Infrastructure Publication Updates



Nuclear
Infrastructure
Development



Aug. 2023

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes

Housekeeping



The webinar is recorded



Materials and recording will be posted on the webinar web-page



Q&A button for all questions



Aug. 2023

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes



Objectives

- Provide an opportunity for the IAEA to present the IAEA TECDOC-2013 on country case studies on developing management systems for new nuclear power programmes.
- Provide practical experiences and recent lessons learned from our Member States.



Aug. 2023

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes



Our speakers today



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PEJ, Poland



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PAA, Poland



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Aug. 2023

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes



Opening by Liliya DULINETZ

- Section Head, Nuclear Infrastructure Development Section, Department of Nuclear Energy, IAEA
- Previously worked as Deputy Director, Nuclear Energy Department, Ministry of Energy of the Republic of Belarus
- Over 15 years of experience in the Nuclear Power Program implementation:
- Nuclear Power Plant project management
- State management in Environmental Protection
- International cooperation in the Energy field
- Worked over 10 years at the Thermal Power Station
- Graduated from the Belarusian Technical University





Aug. 2023

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes



Mr. Ian GRANT

- Ian Grant has wide experience in international nuclear engineering and regulation. In his consulting practice he advises a variety of clients including the IAEA on infrastructure needs and regulation of new nuclear developments,
- Ian helped to lead the new national nuclear regulator in the United Arab Emirates and oversaw the construction and commissioning of the Barakah NPP from 2009 to 2018,
- Previously, Ian exercised senior leadership roles at the Canadian Nuclear Safety Commission with responsibility for licensing Canada's fleet of nuclear power plants,
- Earlier in his career, he worked on nuclear design and manufacturing with Atomic Energy of Canada Limited, and Babcock & Wilcox in the United Kingdom,
- He holds a Bachelor of Science from the University of Glasgow and a Master's degree from Cranfield University in the UK, is a licensed professional engineer in Ontario, and a Fellow of the UK Institution of Mechanical Engineers.





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Introduction to TECDOC-2013

***“Experiences of Regulatory Bodies and
Owner/Operator Organizations in Developing
Management Systems for New Nuclear Power
Programmes”***

IAN GRANT
Consultant
Canada

Presentation outlines

- **Background**
- **Objective and scope of the TECDOC**
- **Document structure**
- **Contributors to Case Studies**
- **Summary of case studies**
- **Key Messages from the Case Studies**

Background

- Each organization involved in a new nuclear power programme is expected to establish and maintain a management system in line with the requirements of the IAEA Safety Standards.
- The management system needs to reflect the activities to be implemented in each phase of the programme.
- IAEA Integrated Nuclear Infrastructure Review (INIR) missions as well as other expert missions have identified deficiencies in management systems were identified in several embarking countries, in particular those countries in Phases 2 and 3.

Objectives and Scope of TECDOC-2013

- The objective of this publication is to present the experiences of key organizations in different Member States engaged in implementing management systems in compliance with relevant international standards and national regulations.
- This publication focuses on selected Regulatory Body and Owner–Operator organizations, which are currently engaged in development or that have developed their management systems to support nuclear power programmes.

Document structure

Section 1 describes the introduction, background, objectives, and scope of the *TECDOC-2013*.

Section 2 introduces the importance of management systems in the development of a nuclear power programme and overviews the relevant IAEA publications.

Section 3 summarizes the findings of the Agency's peer review services and assistance provided to key organizations in Member States in support of Nuclear Power Plant projects.

Sections 4 evaluates the experience of the contributing organizations in developing an integrated management system in the frame of their planned or existing Nuclear Power Plant project.

The Appendices provide a summary of the case studies considered in this publication, while the full case studies are available online as working material on the NIDS Interactive Platform.

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Contributors to Case Studies

- **Four Countries:** *Ghana, Poland, Türkiye and UAE*
- Varied levels of implementation of the nuclear programme from Milestones Phase 1 through Phase 3
- **Four** *Regulatory Bodies*
- **Three** *Owner/Operators*



Summary of Case Studies

A high-level summary identifying the common factors in the understanding of the need for management systems, development and implementation of appropriate management systems by RB and O/O organization in each of the relevant phases of development of the national infrastructure for nuclear power.

Headings of Case Study Experience

- Requirements for a management system
- Responsibilities for the management system
- Management system planning and development
- Documentation of the management system
- Integration of the components
- Graded approach
- Implementation of the management system
- Values and organizational culture
- Measurement, assessment and improvement of the management system

Key Messages from the Case Studies



- The Owner–Operator organisations developed their management systems in accordance with the national nuclear law and other legislation, regulations and guidance specified by the Regulatory Body and their business needs.
- The Regulatory Body’s management system is generally developed in accordance with the relevant IAEA publications to deliver the mandate set out in the national legislation.
- The management system evolves as the nuclear programme progresses from bidding and procurement through construction to operation and the oversight and inspection of these activities.
- Core processes need to be developed based on the needs in each phase of the nuclear programme, from procurement, licensing, construction, and vendor oversight, to commissioning and operation.
- Leadership of senior management is critical to facilitate change and support the development of the management system and its continuous improvement.
- Engagement of people in all parts of the organization was identified in all cases as vital to gaining widespread awareness, belief in, and use of the management system among staff.
- Finally, the management system supports the organization’s consistent delivery of results and thereby enhances nuclear safety and security and inspires stakeholder trust, respect, and confidence in the organization’s role.



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Thank you!





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Development of Management Systems in Countries Embarking on New Nuclear Power Programmes

Mr Tomasz TRZCINSKI

- Over 20 years of professional experience in Management Systems including more than 8 years in Polish Nuclear Power Program.
- Master degree in Economic Integration of European Union and Quality Manager post graduate studies on Warsaw University of Technology.
- Management System Representative, Quality Manager, IMS Expert in various highly regulated sectors like: automotive, medical devices, medical services, IT an nuclear.
- Qualified Lead Auditor 9001 / 14001 / 27001, Process Manager, Project Manager, Change Practitioner, Facilitator, Compliance Officer.





Świadomie o atomie
energia jądrowa w Polsce

Polskie Elektrownie Jądrowe sp. z o.o.

PEJ MS Case study

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes

29.08.2023

Tomasz Trzciński

The decision to implement an integrated management system in the Company was made in November 2013 on the basis of a business case developed with an external expert Jongile Majola. Decision on IMS and option chosen on approach to applicable requirements was aimed at preparing the organization to move to the 2nd phase of the program after making the decision to implement the PNPP.

➤ Based on the business case and the report from consulting agency the works related to the implementation and maintenance of the IMS was included in the basic scope of the agreement with Technical Advisor - AMEC Foster Wheeler in the agreement of December 2014. The first product of the agreement was the IMS Implementation Plan developed by TA, received in June 2015.

➤ In the meantime, the Company decided to take over the execution of environmental and location studies from WorleyParsons. In order to support these activities, a Quality Assurance Plan was developed as well as the necessary procedures for the location and environmental research. The plan and documentation of the quality system was to be replaced by IMS based on a set of management standards from the ISO family.

➤ The implementation of the IMS began with the preparation of basic system procedures and the service authorization granted for the methodology of the Program and projects. At the same time, expert support in the area of the management system was obtained in the person of Jeannot Boogard.



amec
foster
wheeler

2016 – Rapid development and sudden braking

Along with the development of the organization, a quality assurance and management system team of 5.5 FTEs was built. Most of the key management system documentation was prepared in accordance with the requirements of ISO standards and taking into account the requirements of 2006 General Safety Requirements GS-R-3 and the applicable IAEA guidelines.

➤ In line with the strengthening of the QA and MS teams in the first half of 2016, the documentation of the Integrated Management System compliant with a wide range of IAEA publications grew very dynamically.

➤ In mid-2016, two key changes to the management system influenced further work. New IAEA 2016 GSR Part 2 - Leadership and Management for Safety published. The owner's decision limited the scope of the NPP program solely to the implementation of research and development of an environmental and site evaluation report.

➤ In order to adapt the management system to the Company's new strategic goals and new system requirements, it was necessary to reduce the list of processes and modify the system documentation.

➤ At the same time, significant organizational changes were introduced in a short period of time, including the reduction of the overall number of employees in the organization by 45%, and reduction of the IMS team to one person.

IAEA Safety Standards
for protecting people and the environment

**Leadership and
Management for Safety**

General Safety Requirements
No. GSR Part 2

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In 2017, the Company worked towards implementation of the approach based on the Program and projects and made efforts to obtain greater support from the IAEA both under the technical cooperation program and by joining the PUI program.

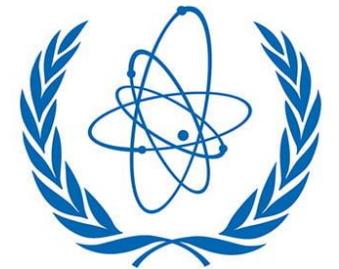
➤ The result of these activities was the start of close cooperation with the Agency and external experts in the field of reviews and assessments of the integrated management system and safety culture.

➤ The first event in the series was a workshop with top management and candidates for process owners in April 2018. At the meeting, a new map of processes, process descriptions and diagrams, as well as assumptions related to the selected approach were presented.

➤ Additional people were recruited both from the inside and outside of the organization to work on the management system and in November 2018 the Company was ready to present the set of newly established policies and 6 new processes compliant with both ISO and GSR Part 2 on the first Expert Mission.

➤ The Company's goal was to prepare for the ISO 9001 and then ISO 14001 certification audit

➤ The next Expert Mission in July 2019 covered another batch of 8 processes and the works continued.



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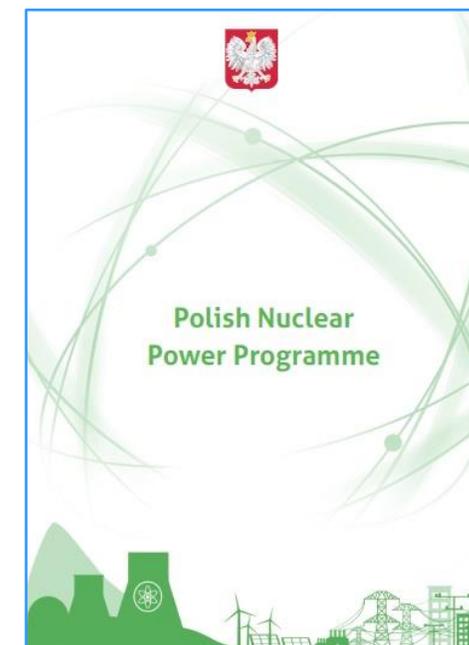
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Despite the beginning of the Covid period, further development and adaptation of the management system in the Company has been intensified. Contrary to fears, remote work has allowed both to make significant progress and to carry out a number of online events related to development and assessments of MS.

➤ In 2020, a number of events were carried out with the Agency's support, starting with a remote review of process documentation in January and an Expert Mission in February and November in the field of the management system, through expert missions dedicated to the assessment of the Stakeholder Engagement Plan and Systematic Approach to Training - SAT in September, and Safety Culture Mission in November.

➤ In June 2020 the Management Board decided to abandon plans to certify the management system in compliance to ISO standards in favour of full implementation of IAEA requirements and even closer cooperation with the Agency in terms of the Integrated Management System and Safety Culture.

➤ In November 2020 an updated PNPP was approved by the Government and the Company's mission was changed to include execution of the amended PNPP in its full scope. Following that on March 30, 2021, the ownership of the company was changed and it became 100% state owned. Also the company name was changed to PEJ - Polskie Elektrownie Jądrowe.



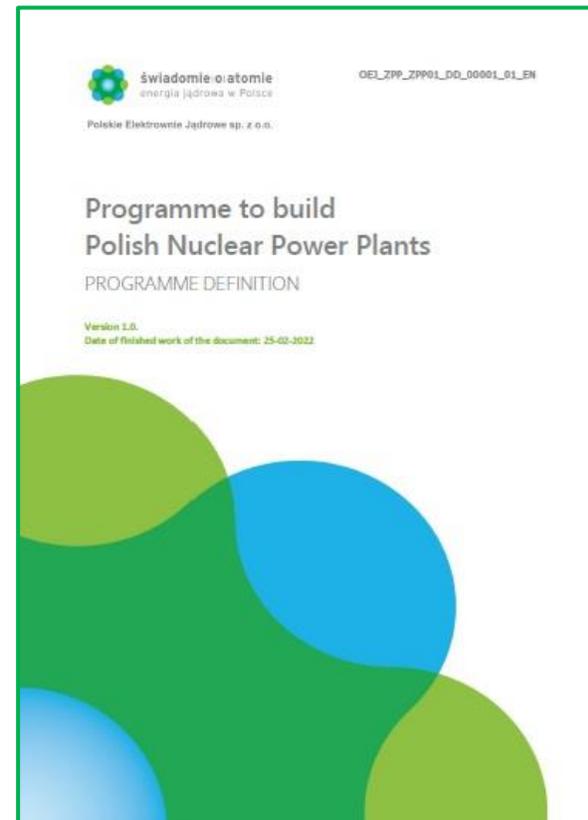
At the beginning of 2021, IMS PEJ was practically ready. An expert review mission dedicated to confirming the completeness and compliance of the PEJ's process based management system supporting 2 Phase of Program took place in June 2021. PEJ provided a GAP analysis to the requirements of GSR Part 2 and the status of actions taken in result to previous IAEA assessments. At the same time SEED mission assessing the used methodologies and partial inputs to the environmental report was conducted.

Next expert mission dedicated to the safety culture took place in October and in November, the mission was dedicated exclusively to graded approach on MS and Change Management was conducted to support the Company in further development of its compliance with the best practices and nuclear standards.

In 2022, as a result of the change of the name, visual brand identity, aim, articles of association, new relations with stakeholders, including the ownership change, change in the scope of activities of the Company and new strategic goals, a decision was made to revise the IMS.

The Management System component was established within the new Program on May 24, 2022, and following that a dedicated project was initiated.

The project started with revision of the mission, vision and key values, and the policies, the IMS manual and Documenting the IMS procedure.



As a next step in the project new process map was prepared to take into account the transition of the organization and PNPP from Phase 2 to Phase 3 in accordance with the IAEA approach.

Nine new processes were identified to prepare system documentation to support the process of design and construction and management of contracts with key partners, which reflect the intensified activities after the selection of a technology supplier for the first Polish nuclear power plant.

The higher priority given to the IMS was also reflected in the fact that in the Q4-2022 and Q1-2023, in addition to the 2 IMS team members, 3 new employees successfully joined the team.

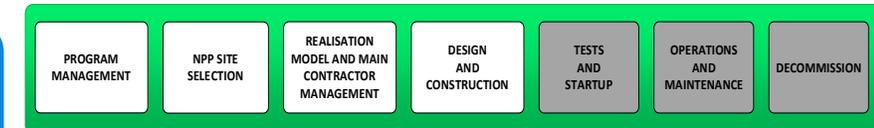
Other processes were either redesigned or created to highlight other important functions performed by PEJ under the Program. Knowledge and risk management, management system and safety culture, quality and change management were identified as the most important areas critical to the safe, secure and peaceful use of nuclear energy.

In October 2022 a dedicated Expert Mission to review and assess the process map and process arrangements was conducted. The revised process map, including processes for the 2nd and 3rd Phase of the Program and the list of process owners were approved by the Management Board Resolution on February 9, 2023.

MANAGEMENT PROCESSES



MAIN PROCESSES



SUPPORTING PROCESSES



Potential changes effect (e.g. organisation structure change, program scope changes, staffing limitation, requirements and approach change, focus on short term objectives, lack of committment)

Identify

Document

Analyze

Store

Retrieve

Lack of political decision regarding the future of the Nuclear Program, which influence overall performance of the MS implementation project and capability and resources.

Availability of resources from the project organization to perform tasks related to MS development and implementation (tasks additional to normal company operations and daily duties of personel – proces owners, document authors, reviewers).

Integration between owner (Management) requirements and requirements coming from e.g. GSR Part 2 as well as other guides and best practices for the nuclear sector (sometimes contradictory).

Staff turnover – building organisational knowledge and competences in MS, impact on safety culture, awareness and engagement of personel involved in MS implementation project, consistency of MS regulations and compliance with the applicable standards.

Approach to the implementation of the management system or safety culture using the project methodology turned out to be very difficult to implement and consumed a lot of effort and time.

Thank you for your attention

Tomasz.Trzcinski@ppej.pl



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Development of Management Systems in Countries Embarking on New Nuclear Power Programmes



Ms Katarzyna Kaczmarczyk

- Quality management consultant in areas: ISO 9001, TQM, process approach, Business Excellence (EFQM Excellence Model and CAF)
- Coordination and performance of work in the field of development, implementation, review, assessment and improvement of the IMS complying with the GSR Part 2 standard at the PAA (with focus on quality, safety and process management elements/tools).
- Coordination and implementation of tasks connected with fulfilment of other requirements for the PAA management system including: management control, risk management, anticorruption policy development, accessibility of the organisation for people with special needs.





PAŃSTWOWA
AGENCJA ATOMISTYKI

IMS implementation

National Atomic Energy Agency

(Republic of Poland)

Katarzyna Kaczmarczyk

IMS Coordinator

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NIDS Webinar on Management Systems

29 August 2023

Tasks of the PAA

- **Regulating**
 - drafts of legal acts
 - recommendations of the PAA President
- **Authorisation, supervision and inspections of:**
 - activities with ionizing radiation sources
 - nuclear facilities and radioactive waste repositories
- **Radiation situation monitoring** and assessment
- **Emergency preparedness**
- Nuclear materials accountancy
- Professional authorisation
- International cooperation
- Communication /informing on NS&RP issues

Second → Third Phase
of the Polish NPP

Towards Integrated Management System



before 2014

Mission, vision (2012)
 Management control standards
 Quality Policy
 Procedures

2016

Draft Manual (GS-R-3)
 Identification of processes

2017

MS Review
 MS Manual GSR Part
 Safety Policy
 IMS implementation Project

2018

Process approach
 System procedures

2019

MS Review
 Internal audits

2021

ISMS
 ISO 27001

Further development
 and integration of
 MS Leadership & SC
 Processes for the
 phase 3

Integration and compliance with all obligatory or adopted requirements



MS developed from existing system

- PAA MS before 2014

Direction /goals / planning:

- Vision, mission, Quality Policy (2012)
- Strategic goals & the PAA Plan of Actions
- Tasks oriented budget (including targets and measures)

MS documents

- Document required by law (e.g. Organizational Byelaw, Work Regulations, Chancellery instruction etc.)
- Internal normative acts (orders of President and DG)
- **Procedures and instructions** (of organisational units)
- other e.g. programmes, plans etc.
- **Risk management** (risks for goals and tasks of PAA; Risk register)
- **Self-assessment** (of 'management control' - questionnaire)

Implementation of the IMS

- **IRRS Mission – 2013**
- 2014 - 2015 priorities:
 - **Process management**
 - Identification & description
 - **MS Manual** - draft referring to the GS-R-3
 - **Key elements of quality management system**
(basic procedures)

2016

- **Revision of structure of processes**
- **GSR Part 2** – new draft of the IMS Manual
- setting up the formal **Project of implementation of the IMS**

IMS Project structure

Roles and responsibilities

Element of the of the project structure	People appointed	Roles
The Project Manager	IMS Coordinator / Senior Specialist for the IMS	Coordination, training, preparation of drafts of IMS documents
Project supervision	Director of the President's Office	Supervision, support, communication with the SC
The Steering Committee	President, Vice President, Director General	Approval of plans & documents + support & supervision
The Project team	Representatives of all organisational units - 7 people	Input/consultation of basic elements and procedures of the system

Project of implementation of the IMS

Main phases:

- **Pre-commencement phase** (September – December 2016)
 - Approval of MS Manual and final list of processes
- **Phase I** – 2017 and I half of 2018
 - Consultation and approval of 3 system procedures:
(documents control, IMS review, improvement actions)
 - Processes approach, processes description
 - IMS review
- **Phase II** – II half of 2018 - end of 2019
 - Implementation and further development of IMS
 - Introduction of Internal Audit Programme

Lessons learned from the project implementation

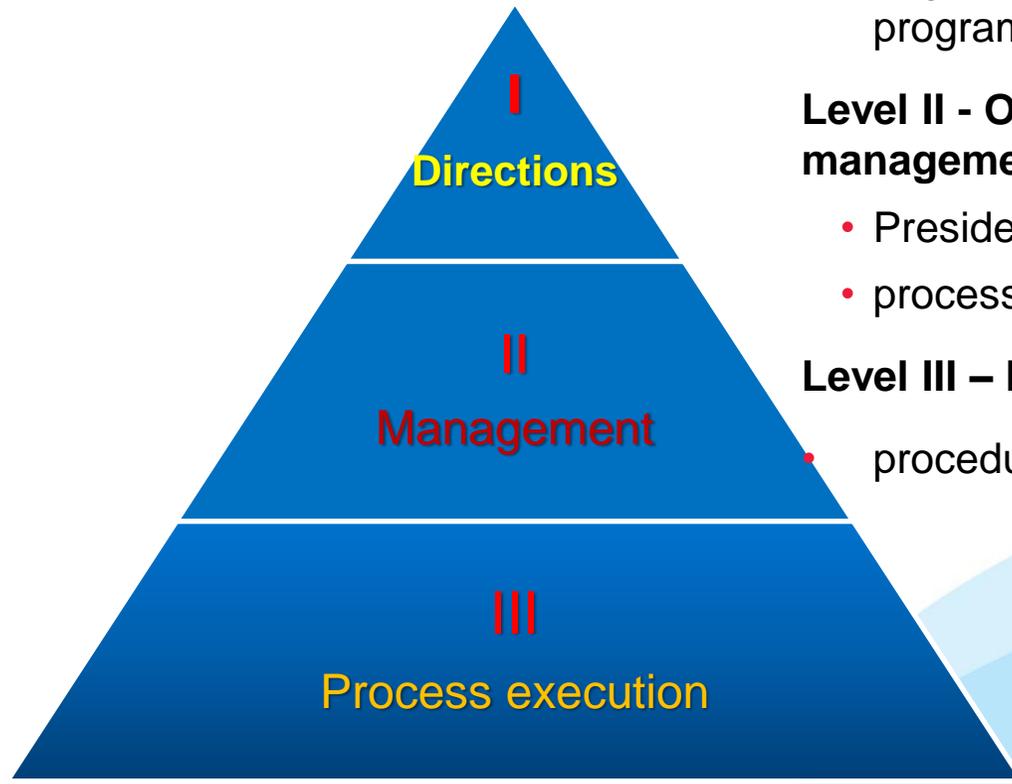
- Train & engage many people as possible
- Top level Steering Committee (& ability to meet and act systematically) vs:
 - direct supervision and support by assigned senior manager
 - consultation and support of all directors/managers
- Project structure quickly replaced by the basic elements of the system:
 - rules set in documents control procedure replaced the rules of approving the „project outputs” by the SC.
 - review of the system and improvement action planning replaced the ‚Project schedule’
 - appointment of permanent roles in the IMS (process owners), replaced the Project team

all above may depend on circumstances and specific of the organization ...

Curent IMS roles and responsibilities

- **IMS Coordinator** (reporting to Director General - DG)
- **Management – President, DG, Directors of units (DU)**
 - Supervision of the processes
 - Verification/approval of IMS documents
 - Review of IMS
 - Decisions & supervision of improvements
- **Process owners (PO)** - around 28 people
 - *Main role: process quality coordinators*
- **Internal auditors** (6 people)
 - **+**
 - Representative for Information Security Management System (ISMS)
 - Representative for Infrastructure Security

Structure of IMS Documents



Level I - Directions and main principles

- Statute, Mission, Vision, **Safety Policy** ;
Organizational Beylow, **MS Manual**, long-term programs and strategies

Level II - Organization management and process management

- President's and DG orders
- process charters/ descriptions

Level III – Process execution

- procedures, instructions, job descriptions

Main challenges concerning IMS documentation

- Legal requirements concerning documentation and practices in the public administration vs quality management practices
 - Orders vs procedures
 - „Documentation” vs ISM documents and records
(vs ISO 9001 „documented information”)
 - Chancellery and Archive Instruction vs IMS ‚records keeping’
- Means to manage above
 - IMS Manual – clarification / general rules
 - Process descriptions and procedures – indicating documents and records for the process
 - Ongoing documents control
 - Electronic documentation management/workflow system

Process management

2014-2015

- **Identification** - bottom-up approach
- **Structure of processes**
 - **Hierarchy:** general processes (process groups), basic processes, sub-processes
 - **Groups:** operational (core), management, administrative (supporting)
- **List of processes** (2015) – 14 general processes and around 70 processes
- **Process owners** – appointment and internal training
- Project „**Processes, goals, competencies — integrated management**” (financed from EU Social Funds) - mapping of the 10 processes – detailed EPC notation

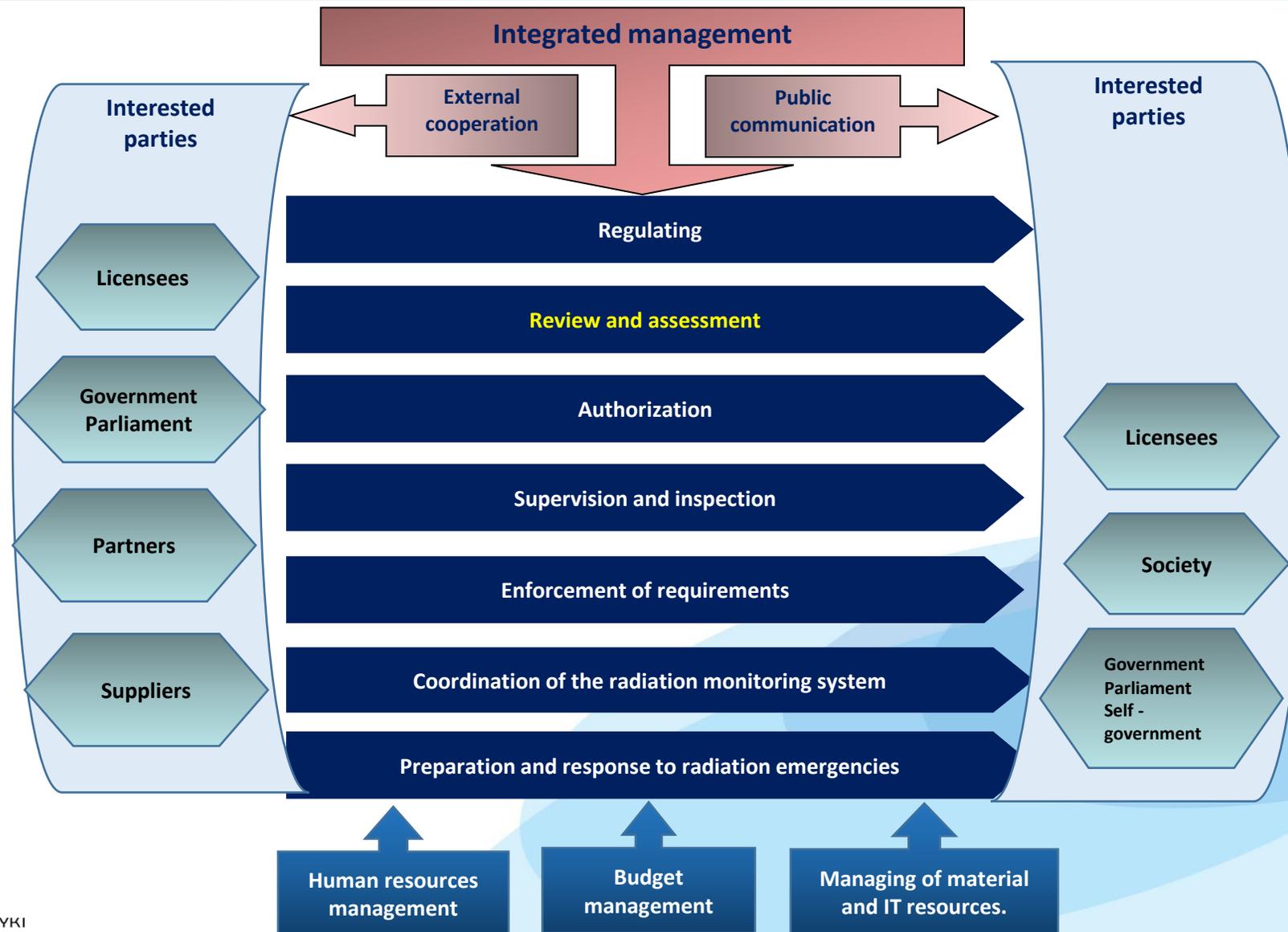
2016

- **New simpler hierarchy:** processes (main) & sub-processes
- **New shorter list of processes (13 processes and 29 sub-processes)**

2020 – 2021

- electronic description, diagrams

The PAA process map (revised)



Main challenges concerning proces management

- Understanding and engagement
 - Process vs my responsibility vs responsibility of my org. unit
- Competence in terms of process management
 - (Inc. measures, indicators, effectiveness etc.)
- Employees/PO rotation
- Reluctance to wide use of measurable targets and indicators
- Reluctance to formalization - of areas done „ad-hoc” and „at the ongoing basis” - including non-conformance control and improvement of the process
 - Some means to tackle with above:
 - Systematic training/workshops
 - Review (self-assessment) of the processes
 - Individual support and consultation

Further development of IMS

- **2019** - Electronic documentation /fork flow & management
- **2020** – implementation of IT tool for IMS (new process descriptions & diagrams)
- **2021** - Implementation of the **Information Security Management System**
 - based on ISO 27000 standard series (ISO 27001; ISO 27005 - Guidance on managing information security risks)
- **2022** – updated process structure (new processes added)
- Implementation of the IT systems and applications supporting IT security and many processes of the PAA
- Ongoing works on development and update of the procedures
- Revision and better implementation of assessment and review tools
- ...

constant change ...

- so the cases study is a picture of the system
in a specific point in time

Some other lessons learned and suggestions

- Note the scope - Implementation of the **quality system** vs Implementation of **IMS** vs **GSR Part 2** (QS is a first stage only);
- System **based on existing one in the RB** – probably not easier (resistance, conviction „it was working so far” & law is enough etc.);
- Management awareness & engagement in systematic use of the system
- Think about electronic tools from the beginning – introducing them later changes a lot (work to be done again), use of electronic documentation management system if possible
- Use the elements of the system systematically, do not lose „momentum”
- Think about „**quick wins**” and **solving the real problems** to engage the personnel (probably one of our bigger mistakes...)
- Train & engage as many people as possible
- Introduce easy way/tools of ongoing communication/feedback



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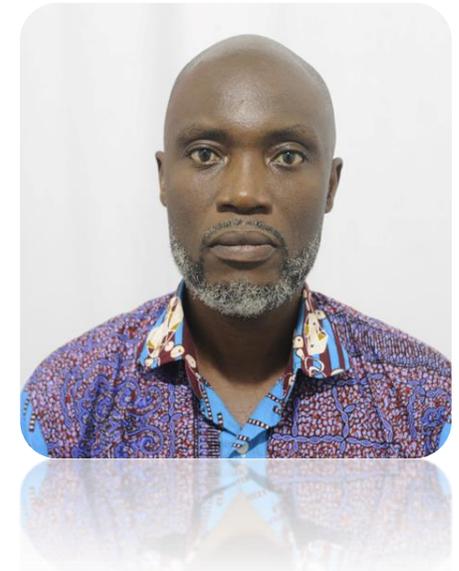
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Development of Management Systems in Countries Embarking on New Nuclear Power Programmes



Mr Charles Kofi KLUTSE

- Senior Research Scientist/ Lecturer, Ghana Atomic Energy Commission, Nuclear Power Institute and School of Nuclear and Allied Sciences.
- helps in the development of process-approach management system for Ghana Nuclear Power Programme.
- Coordinating the nuclear leadership programme and culture for safety; Bioanalytical assessment of food and various environmental samples.
- Lectures radiochemistry, enviro-analytical and spectroscopy courses.
- Experienced in Management system, nuclear leadership and culture for safety, QAQC, and knowledge management; a lecturer and a researcher in radiochemistry, surface enhanced Raman Spectroscopy, nanomaterials applications, optical instrumentation, bioanalytical assessment of food and various environmental samples.





Development of Management System & Leadership Programme: Ghana Case Study, Ghana

Charles K. Klutse (Ph. D)

Nuclear Power Institute, Ghana Atomic Energy Commission

**Development of Management Systems in Countries Embarking on
New Nuclear Power Programmes**

29 August 2023

IAEA Webinar

Objectives

- experience on implementation of the management system
- Internal / external resources mobilized for the development of the management system
- Good practices and lessons learned from the development of the management system



QUESTIONS

Who

Why

?

How

What



WHY NUCLEAR POWER?

HYDRO SOURCES

ELECTRICITY SUPPLY CHALLENGES

FOSSIL SOURCES

**LONG-TERM SOLUTION
BASE LOAD**

- SUPPLY AND PRICE INSTABILITY OF FOSSIL FUELS
- LIMITING NATIONAL HYDRO RESOURCES
- INTERMITTENT AND UNRELIABILITY OF RENEWABLES

ECONOMIC
COMPETIVENESS

- Stable and affordable Tariff

ENVIRONMENTAL
ISSUES

- GHG Reduction
- Global warming
- Climate change

INDUSTRIALIZATION &
ECONOMIC DEVPT

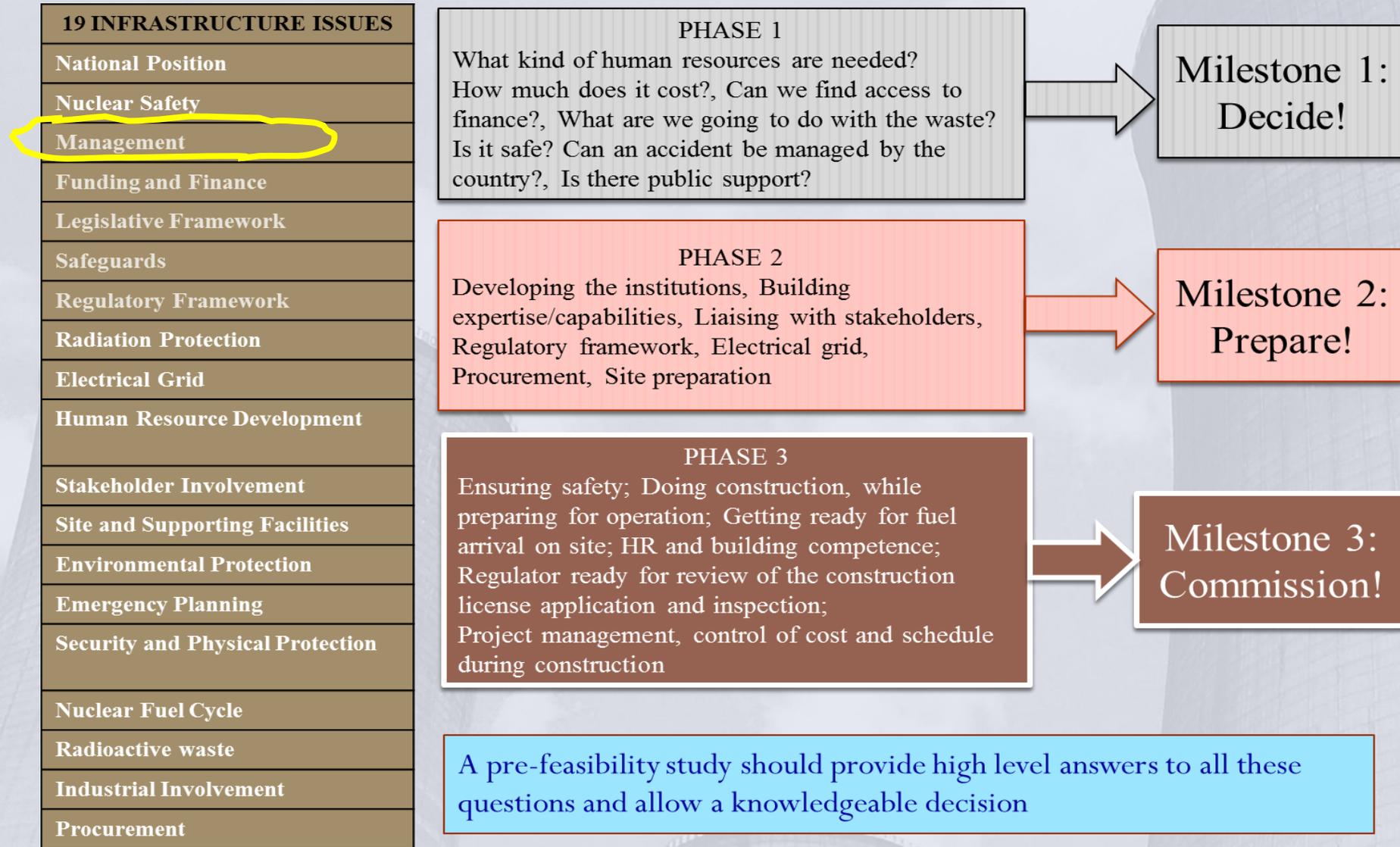
- Poverty Reduction
- Development of Infrastructure Agriculture
- Economic Empowerment

UNIQUE ADVANTAGES

- Clean Energy
- Long Plant life
- Long Operational duration of fuel
- Cheaper Fuel



NUCLEAR POWER: MILESTONE APPROACH



NUCLEAR POWER ORGANIZATIONS

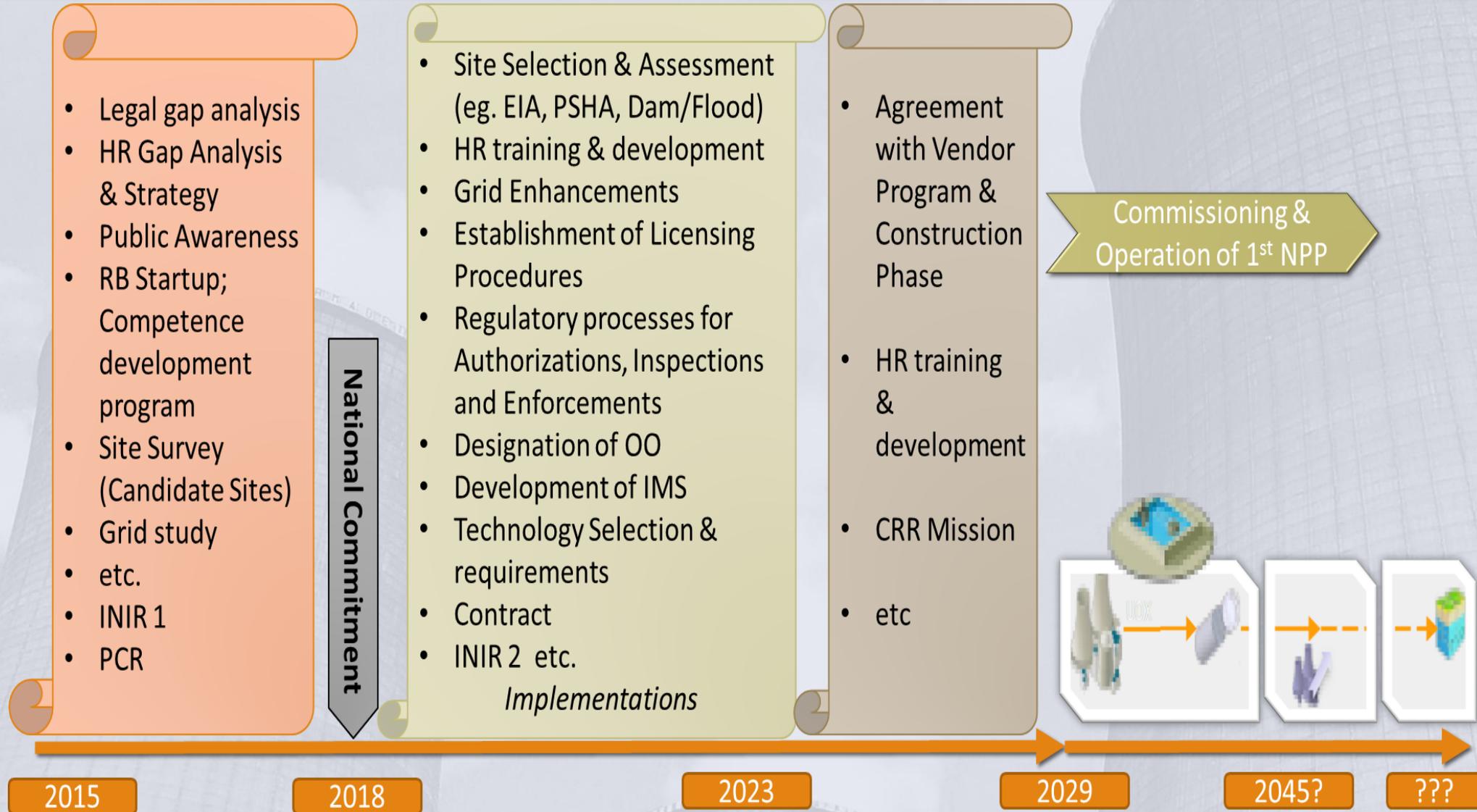
NUCLEAR POWER
GHANA (O/O)

NUCLEAR REGULATORY
AUTHORITY

NUCLEAR POWER
INSTITUTE-GAEC (TSO)

GNPPO

ROADMAP: GHANA NUCLEAR POWER PROGRAMME



INITIAL CONCEPT OF MANAGEMENT SYSTEM

MANAGEMENT
SYSTEM

QAQC



Coordinate the development of QAQC programme for the GNPPO



ISO standards



ASME NQA-1



IAEA safety Standards IAEA



50-C/SG-Q

LEADERSHIP AND MANAGEMENT FOR SAFETY

PHASE1 INIR MISSION

- **Need for appropriate leadership and management systems recognized**

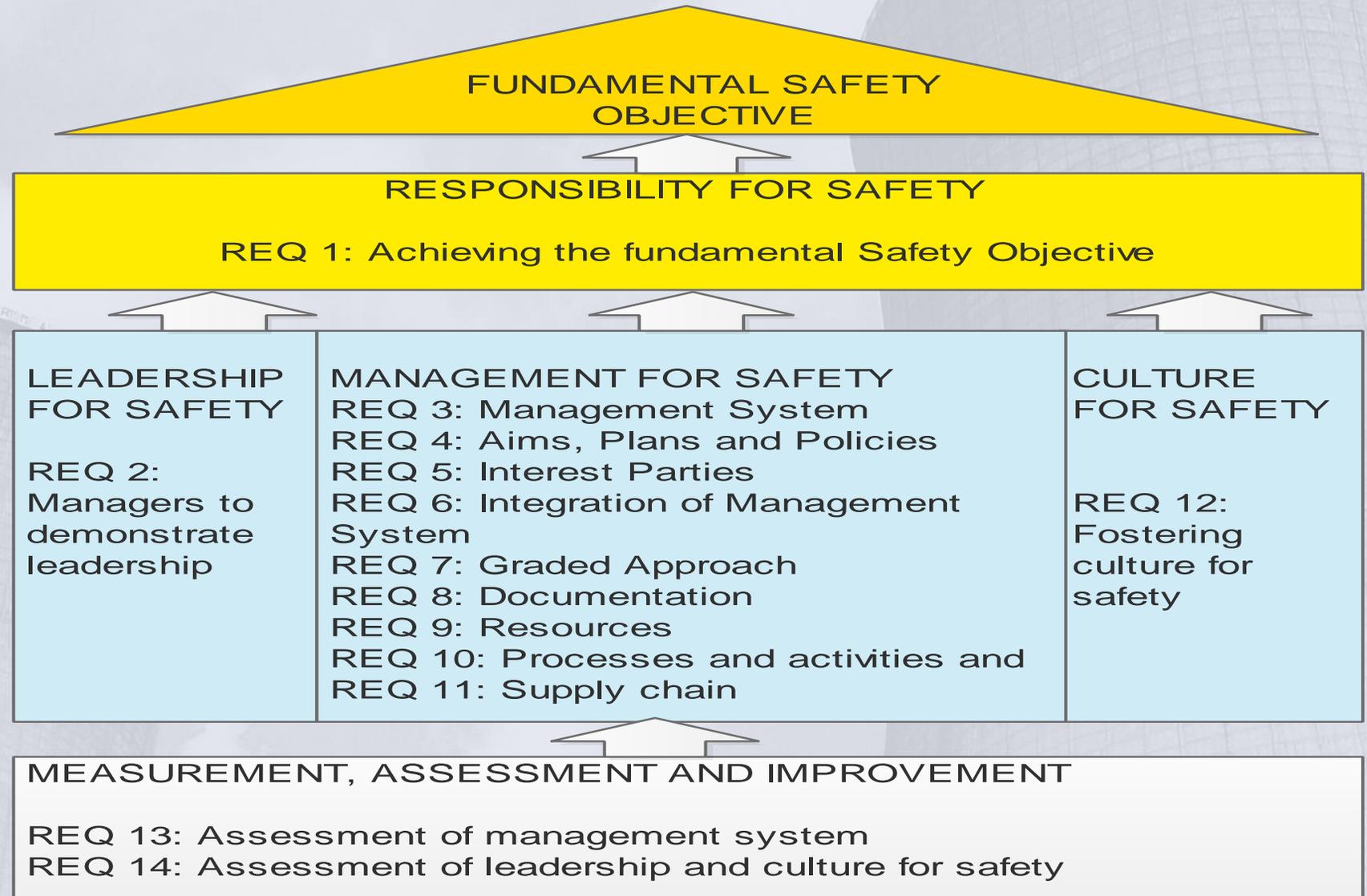
- Preparation for INIR mission and Self-Evaluation Report
- INIR mission Recommendation



LEADERSHIP AND MANAGEMENT FOR SAFETY

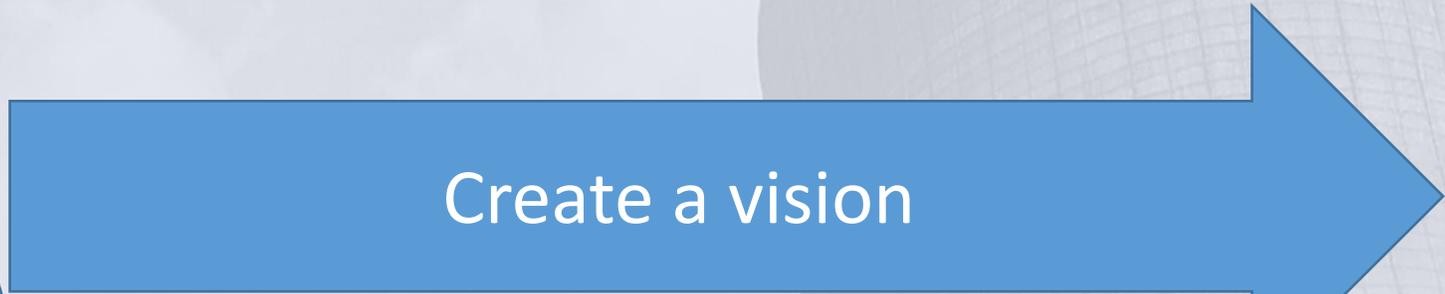
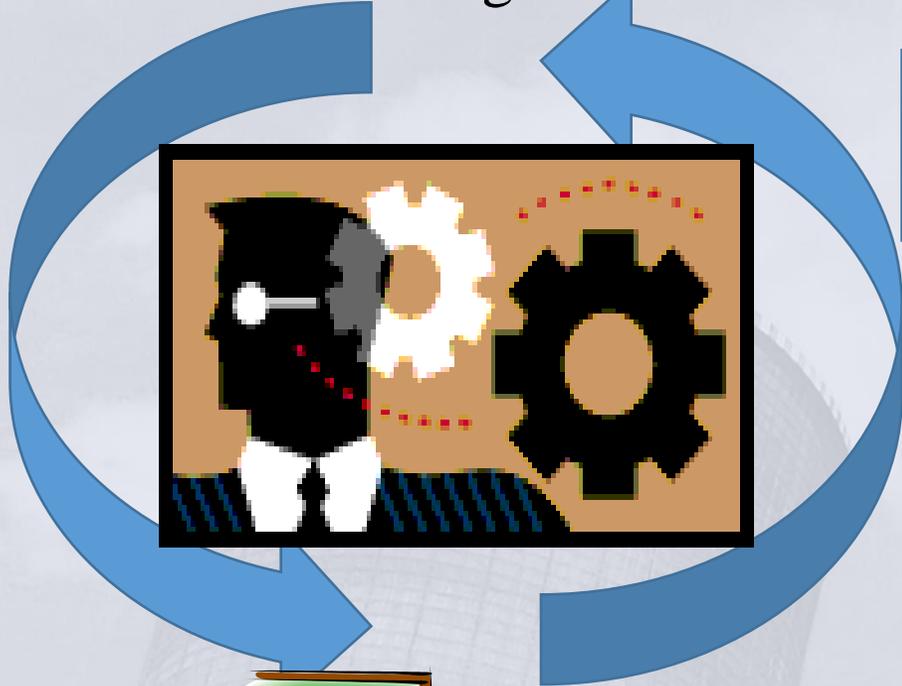
IAEA

- WORKSHOPS,
- TECHNICAL MEETINGS,
- CONFERENCES,
- TRAINING PROGRAMS AND SCHOOLS



Management, Leadership and Culture for Safety

Management



Create a vision



HR



Budgeting



Documentation

Develop a culture for meeting the requirements

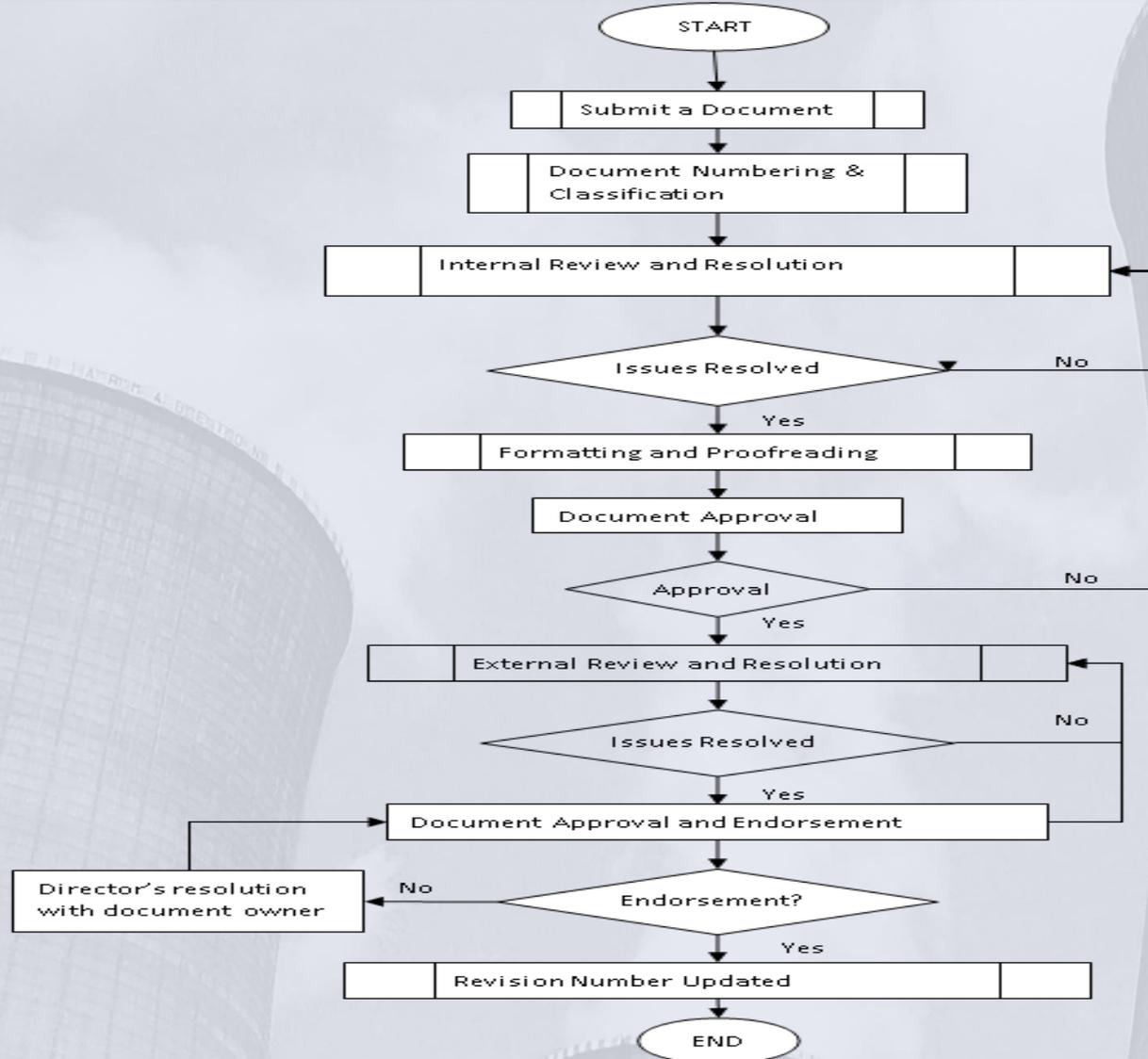
Leadership



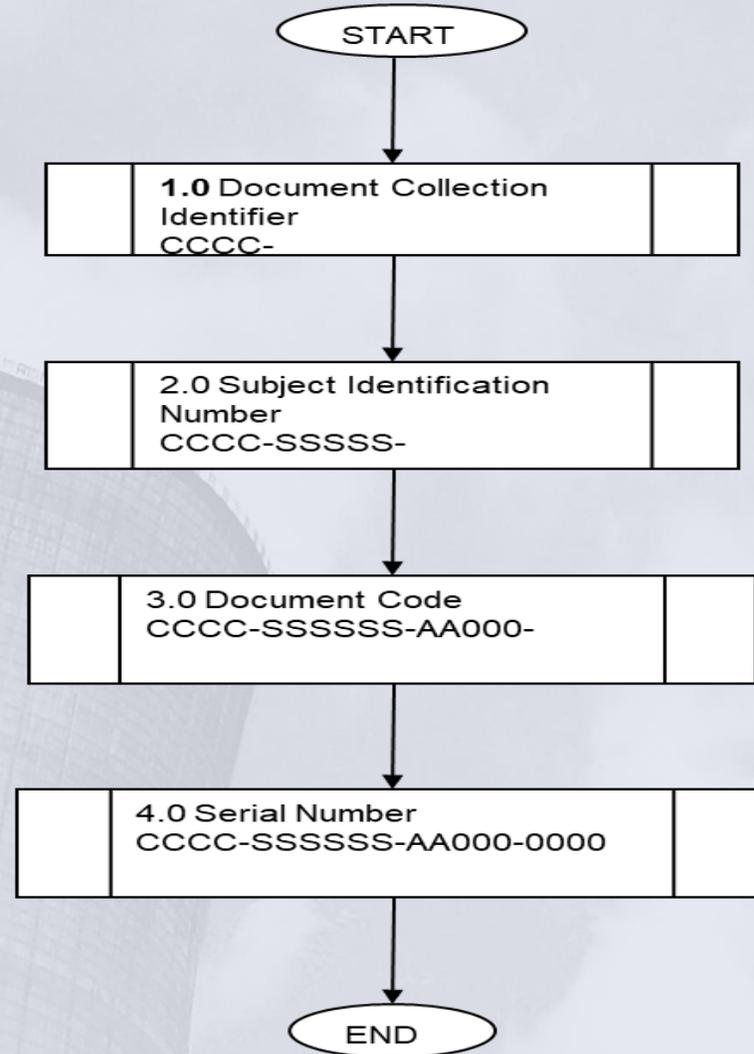
DOCUMENTATION: Document Management



DOCUMENTATION: Review and Approval



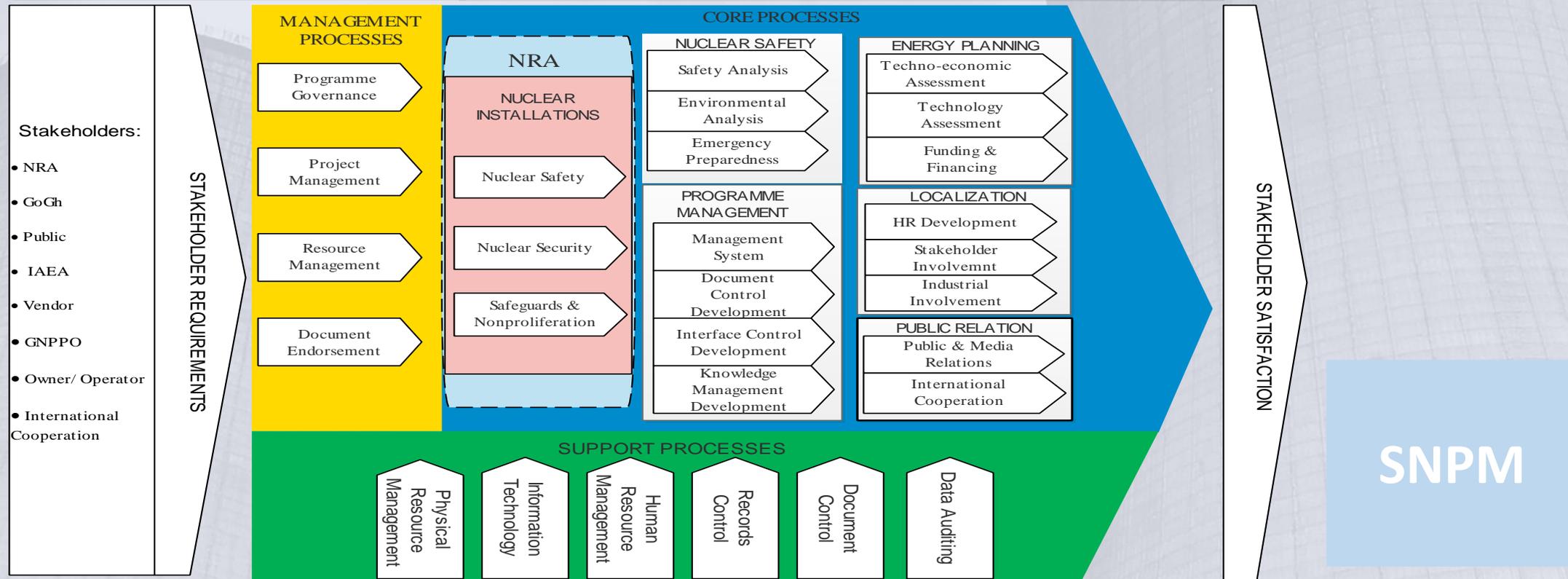
DOCUMENTATION: Document Numbering System



CONCEPT OF PROCESSES MAP

GNPPO MANAGEMENT SYSTEM MAP

<p>VISION: To implement nuclear energy programme for peaceful purposes leading to secure and reliable electricity supply for socio-economic development.</p>	<p>MISSION: Development of human resource, legal and regulatory framework, necessary infrastructure based on best practice; deliver safe, clean, efficient and reliable nuclear energy through effective stakeholder engagement; and development of an effective and independent nuclear regulatory body</p>
<p>CORE VALUES: Safety, Responsible Leadership, Quality, Integrity, Team Work, Excellence, Cost effectiveness, Accountability, National Commitment,</p>	<p>STRATEGIC FOCUS: Strife for Nuclear Safety, Security and Safeguard, Environmental stewardship, Effective Nuclear Regulation, Accountable Ownership, Knowledgeable Customer, Stakeholder Participation, Safety Culture, Human Resources, Competent Operator, Technical competence, Public Awareness, International Cooperation,</p>



MANAGEMENT SYSTEM AND QAQC



Integration of quality

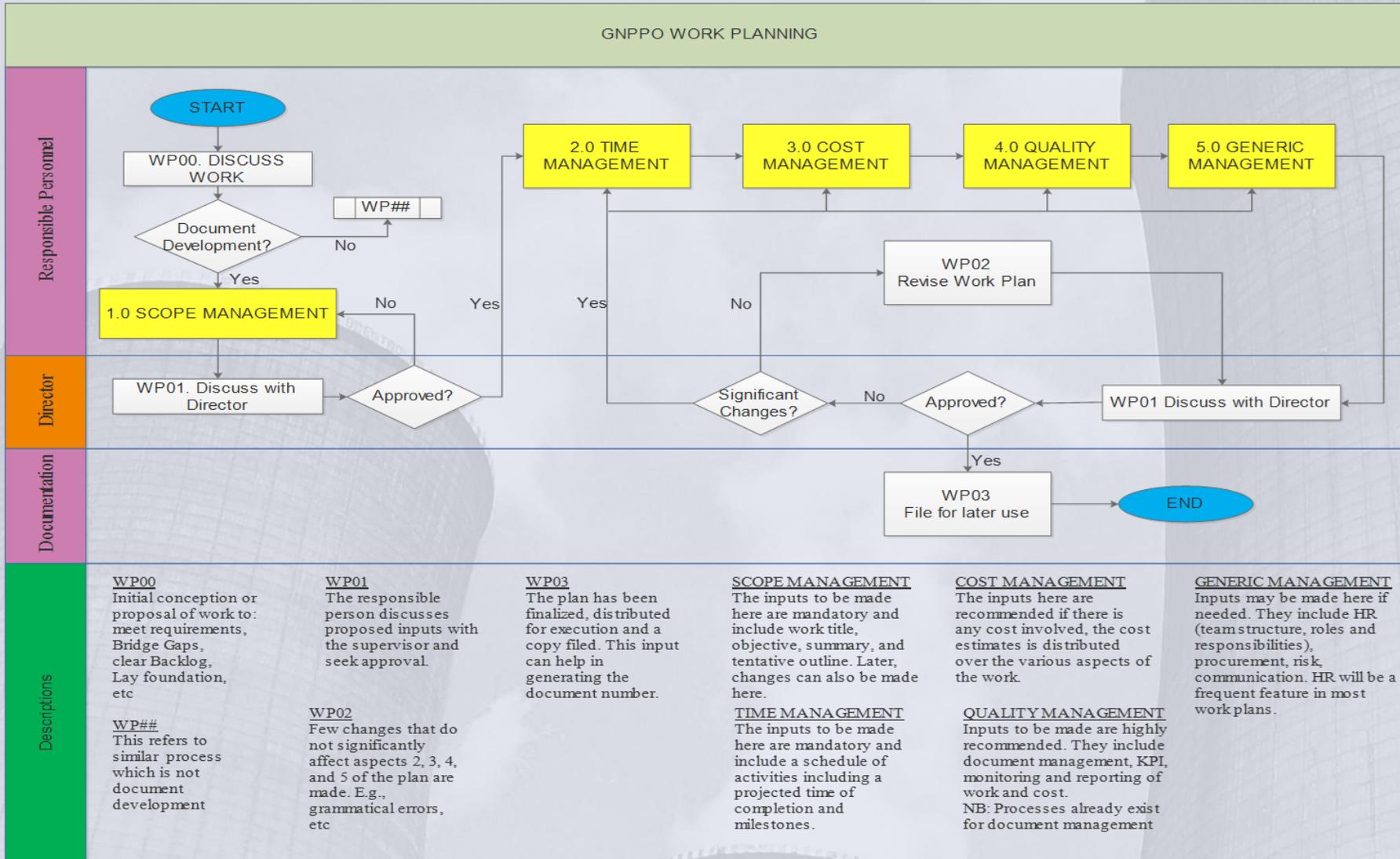
Assessment of quality

Assessment of Processes

Confidence in Quality

**IAEA and PUI
EXPERT MISSIONS**

PROJECT PLANNING



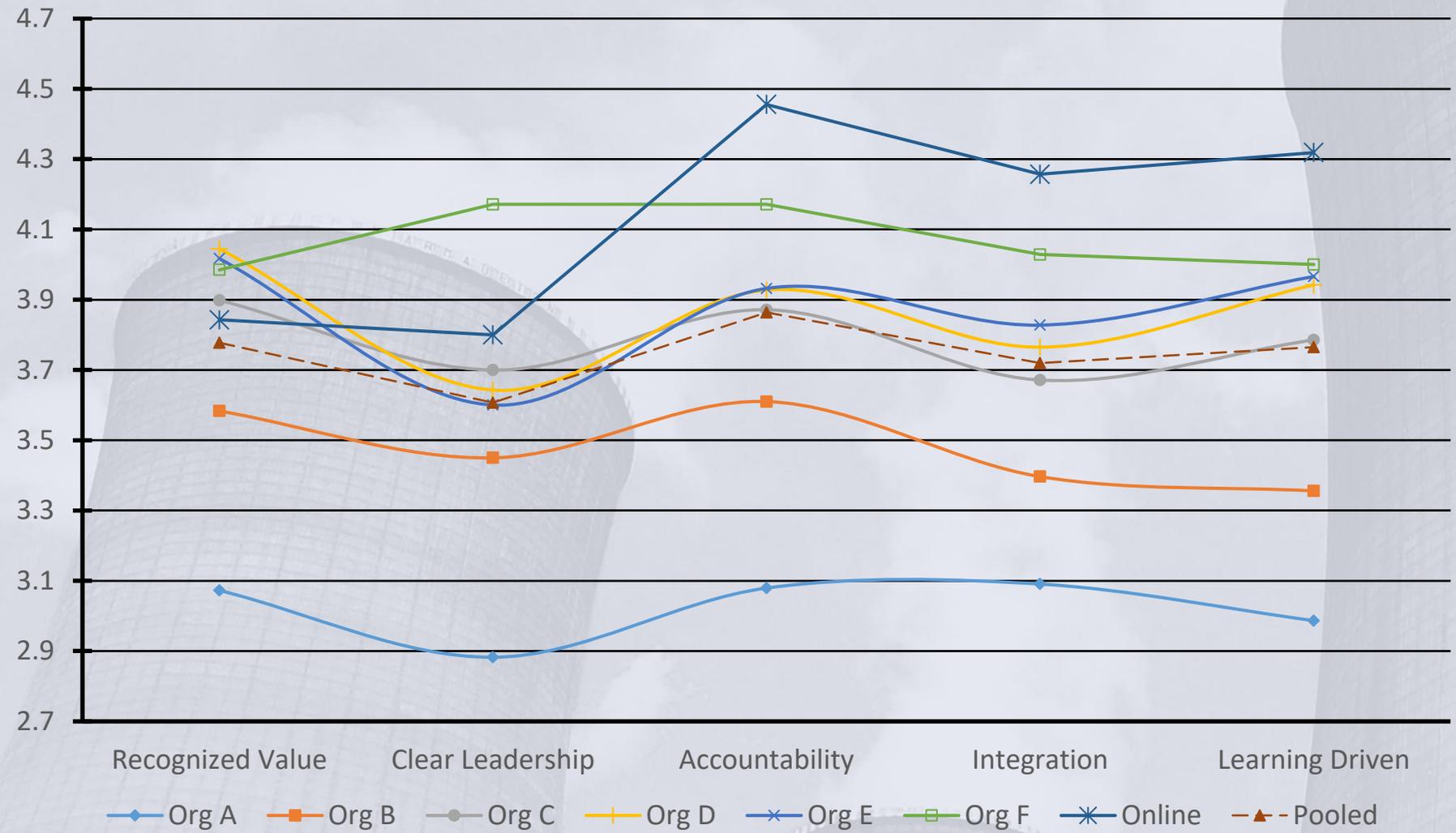
CULTURE FOR SAFETY

- Documents review on safety culture
- Developed plans and strategies for safety culture development
- Organized workshops and conferences on safety culture
- Developed tools and methods for safety culture assessment
- Conduct safety culture assessment of some Ghanaian institutions
- Modify plans and strategies for fostering stronger safety culture in Ghanaian nuclear power organizations



SAFETY CULTURE ASSESSMENT RESULTS

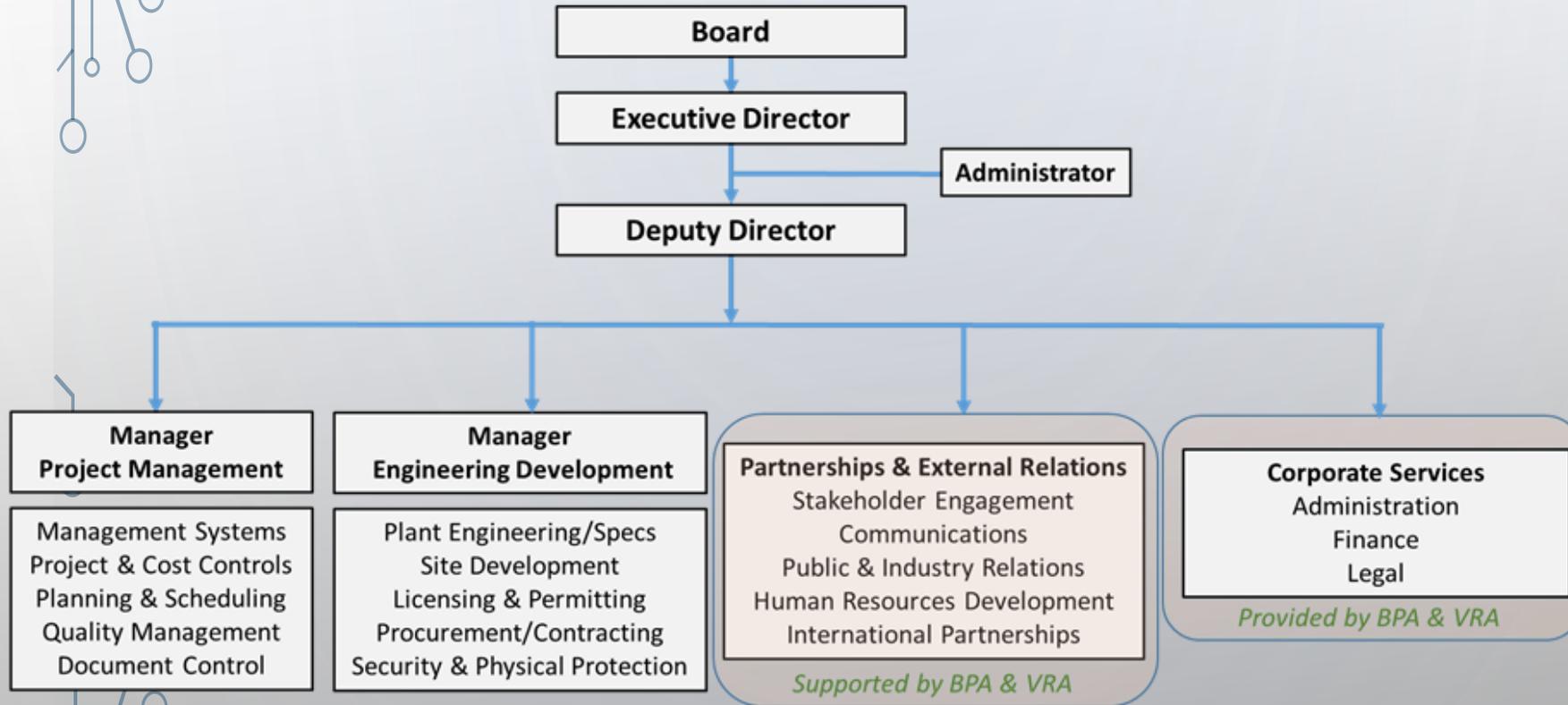
Comparitive Scores



GHANA NUCLEAR LEADERSHIP PROGRAMME

- Documents review on leadership
- Strategy: Centre of Excellence for Ghana Nuclear Leadership Programme
 - For Developing, organizing, delivering modular courses for enhancing nuclear leadership
- Develop the syllabus for the programme
- Conducted an IAEA-PUI expert review mission
- Working on recommendations and suggestions
- Strategic plans for developing and implementing nuclear leadership programme
 - Systematic Approach to Training – SAT

NUCLEAR POWER GHANA



It is made up of key personnel from the 2 public utilities companies in Ghana (Volta River Authority, Bui Power Authority) and the Ghana Atomic Energy Commission

External support is received from the Nuclear Power Institute of the Ghana Atomic Energy Commission and IAEA, PUI

NUCLEAR POWER GHANA



GAP ANALYSIS OF GNPPPO MANAGEMENT SYSTEM

Positives of GNPPPO Management System

Dedicated Centre for Nuclear Programme Management

Knowledge Management

Siting Activities

Process Map

Opportunities for Improvement

Procedures & Instructions for key activities

Change Management & Corrective actions

Clearly defined Interfacing & Sequencing of processes

Records or/ & Feedback system

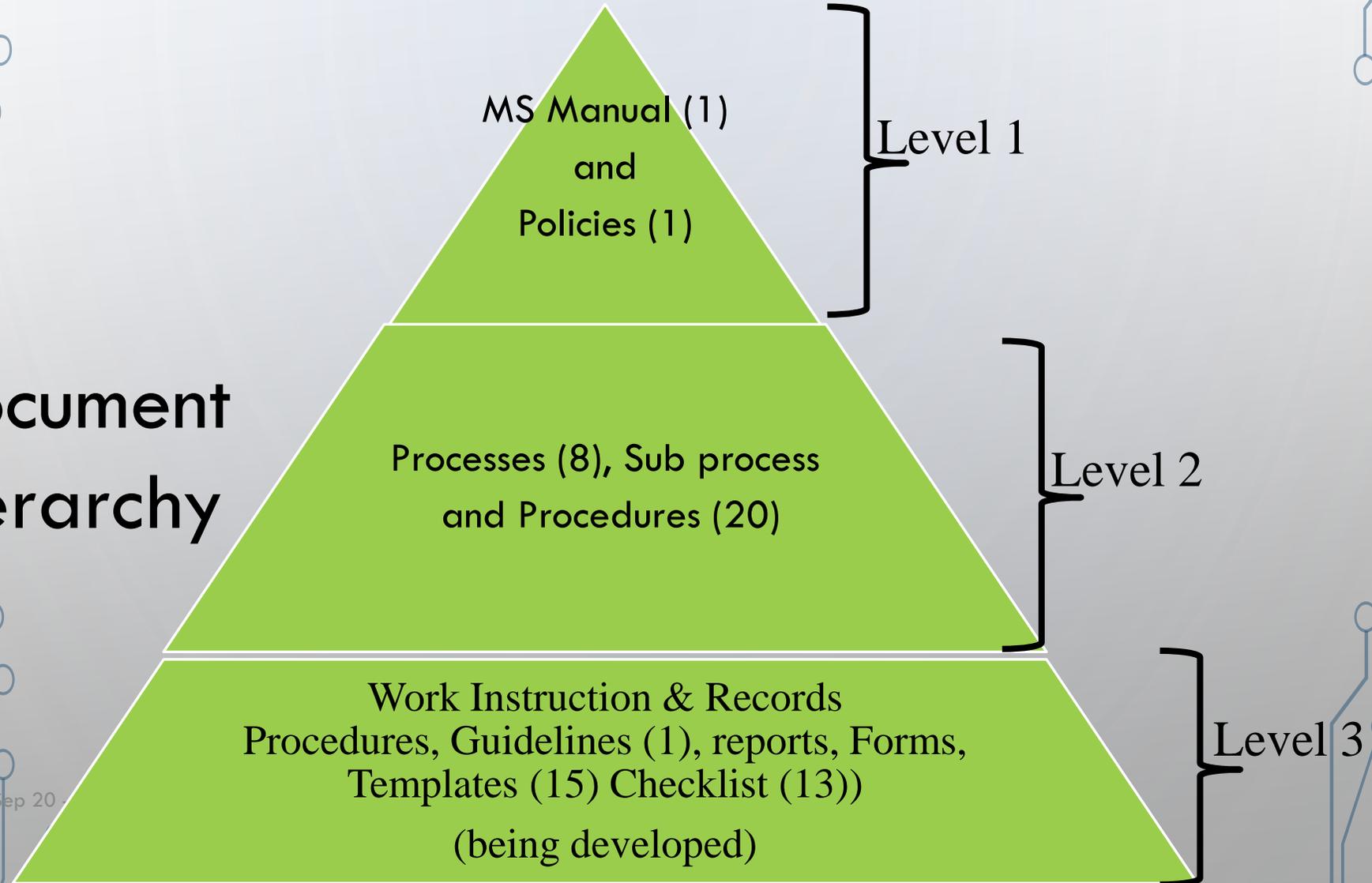
Selection and qualification of Suppliers

SCHEDULES FOR NPG MS DEVELOPMENT

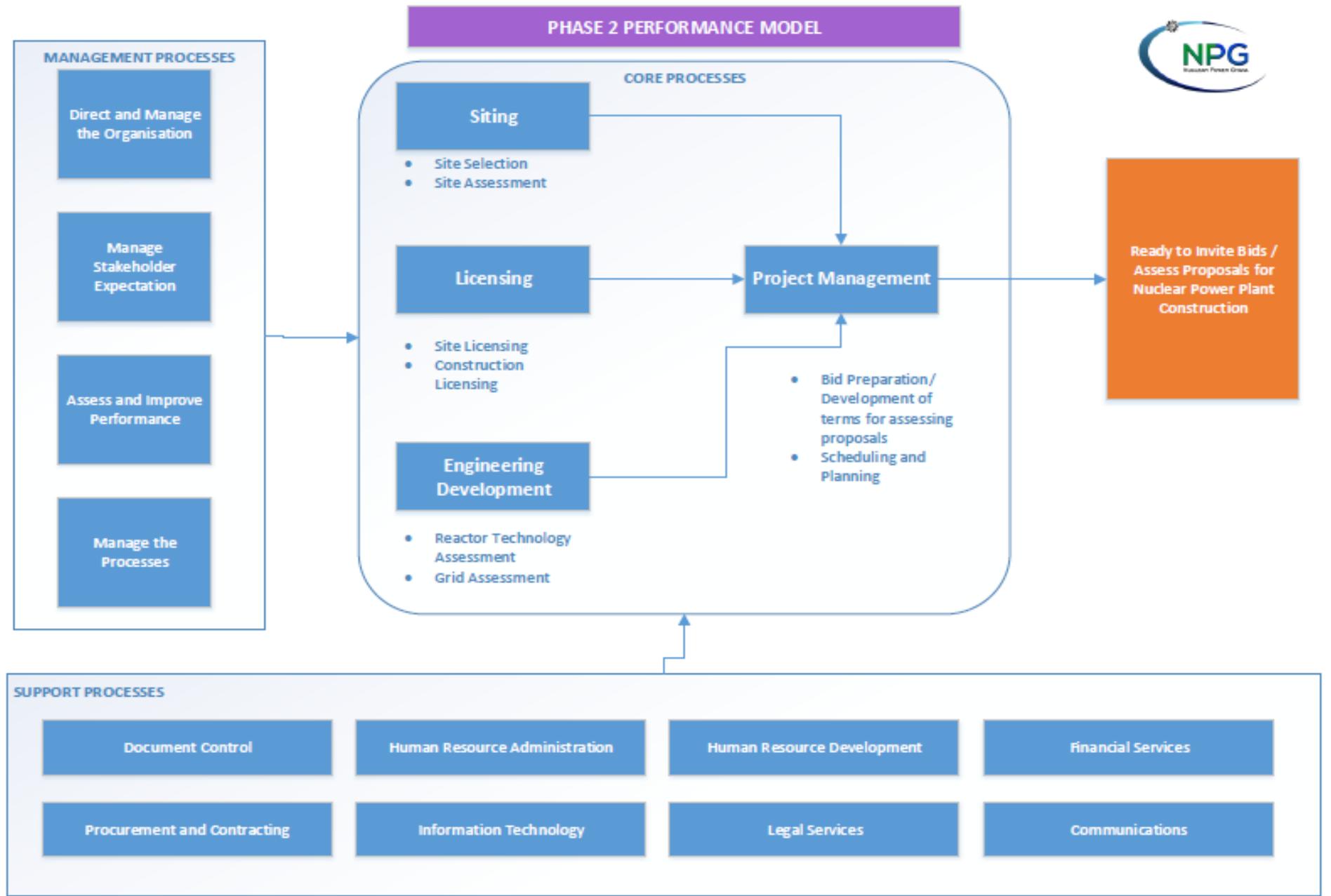
Document/Activity	Phase 1		Phase 2				Phase 3						
	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Gap Analysis Report,													
Implementation proposal													
Business case and implementation strategy													
Establishment of Process Team													
Preparation of Project charter													
Development of Document Hierarchy Structure													
Development of Document management system													
Development of Organizational Framework													
Preparation of Management System Manual													
Preparation of Cooperate governance Manual													
Action plan and schedule for MS development													
Management of Change													
Development of Phase 1 Processes													
Implementation of Phase 1 Processes													
Development of Phase 2 Processes													
Implementation of Phase 2 Processes													
Development of Phase 3 Processes													
Implementation of Phase 3 Processes													
Process Model													
Review Mission 1													
Quality Assurance Process													
Process Description Sheets													
Review Mission 2													
Review Mission 3													
Self-Assessments and Progress Reports													
External Assessment/Audit of IMS													
Capacity Building for the Management System													

IMS DOCUMENT STRUCTURE

Document hierarchy



NPG NUCLEAR PERFORMANCE MODEL



PERSONNEL AWARENESS

- The IMS unit maintains and makes available to staff process description sheets that have a diagrammatic representation of all documents (manuals, procedures, guidelines etc) associated with a process.
- The description sheet also indicates those documents that are obsolete, yet to be developed, and those which are applicable.
- Obsolete documents are shown on the description sheets and discarded from the IMS documentation

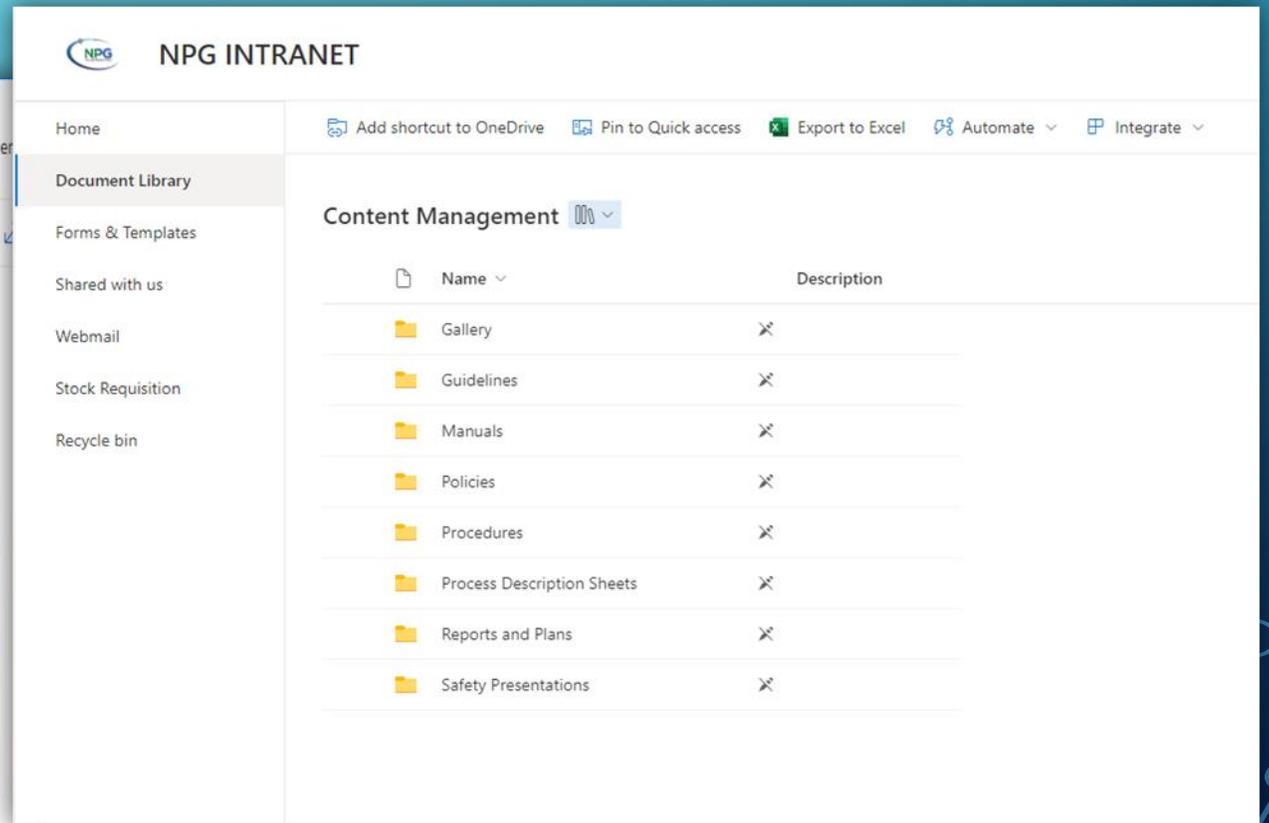


Security Level:	OFFICIAL – Internal Use Only	
Document number:	PROJ-32000-MAN-00-001	Revision: 0
Hierarchy Level:2	Sheet No.: N/A	Page 2 of 28

DIGITIZATION OF THE MANAGEMENT SYSTEM



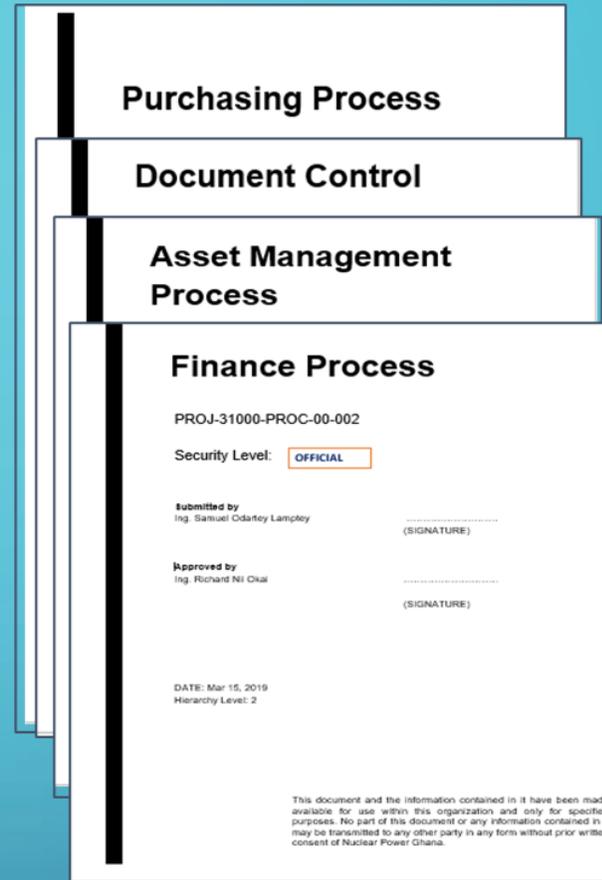
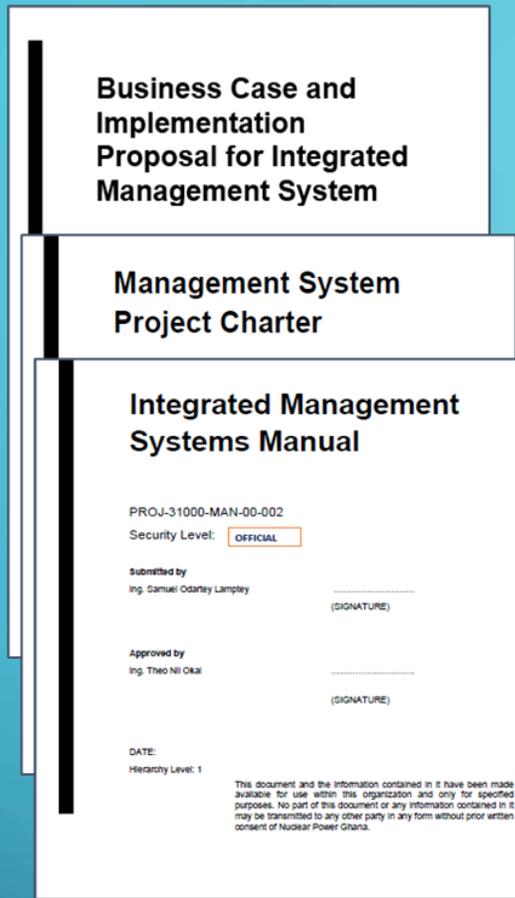
The screenshot shows the NPG Intranet Home page. The header includes the NPG logo and the text "NPG INTRANET". Below the header, there is a navigation menu with options: Home, Document Library, Forms & Templates, Webmail, Stock Requisition, and Recycle bin. The main content area features a large blue banner for a "WORKSHOP FOR SELECTED MEDIA PROFESSIONALS". The banner includes the NPG logo, the workshop title, a 3D rendering of a nuclear power plant, and the theme: "Nuclear Safety, A Public Fear and Concern". The dates "Tuesday - Thursday 19 July - 21 July, 2022" and the location "BPA Height Conference Room Airport Residential" are also displayed.



The screenshot shows the NPG Intranet Content Management page. The header includes the NPG logo and the text "NPG INTRANET". Below the header, there is a navigation menu with options: Home, Document Library, Forms & Templates, Shared with us, Webmail, Stock Requisition, and Recycle bin. The main content area features a "Content Management" section with a table of folders. The table has columns for "Name" and "Description".

Name	Description
Gallery	✕
Guidelines	✕
Manuals	✕
Policies	✕
Procedures	✕
Process Description Sheets	✕
Reports and Plans	✕
Safety Presentations	✕

STATUS OF NPG'S IMS DEVELOPMENT



- NPG has been developing documentation for identified IMS process based on the Phase II process model.
- Processes and procedures for Document Control, Finance, Purchasing, Human Resource Development, etc., have been developed.
- The status of NPG's process development is as shown in the next slide.

NEXT STEPS IN IMS DEVELOPMENT

Plans for Phase 2 Processes

Review, Assessment and Improvement

- Management's Review - Yearly
- Measurement Criteria Review
- Self Assessment Review – Every 2 years
- Independent Assessment – Every 3 years
- Peer Evaluation
- Technical Reviews
- Corrective Action & Continuous Improvement

Process Automation

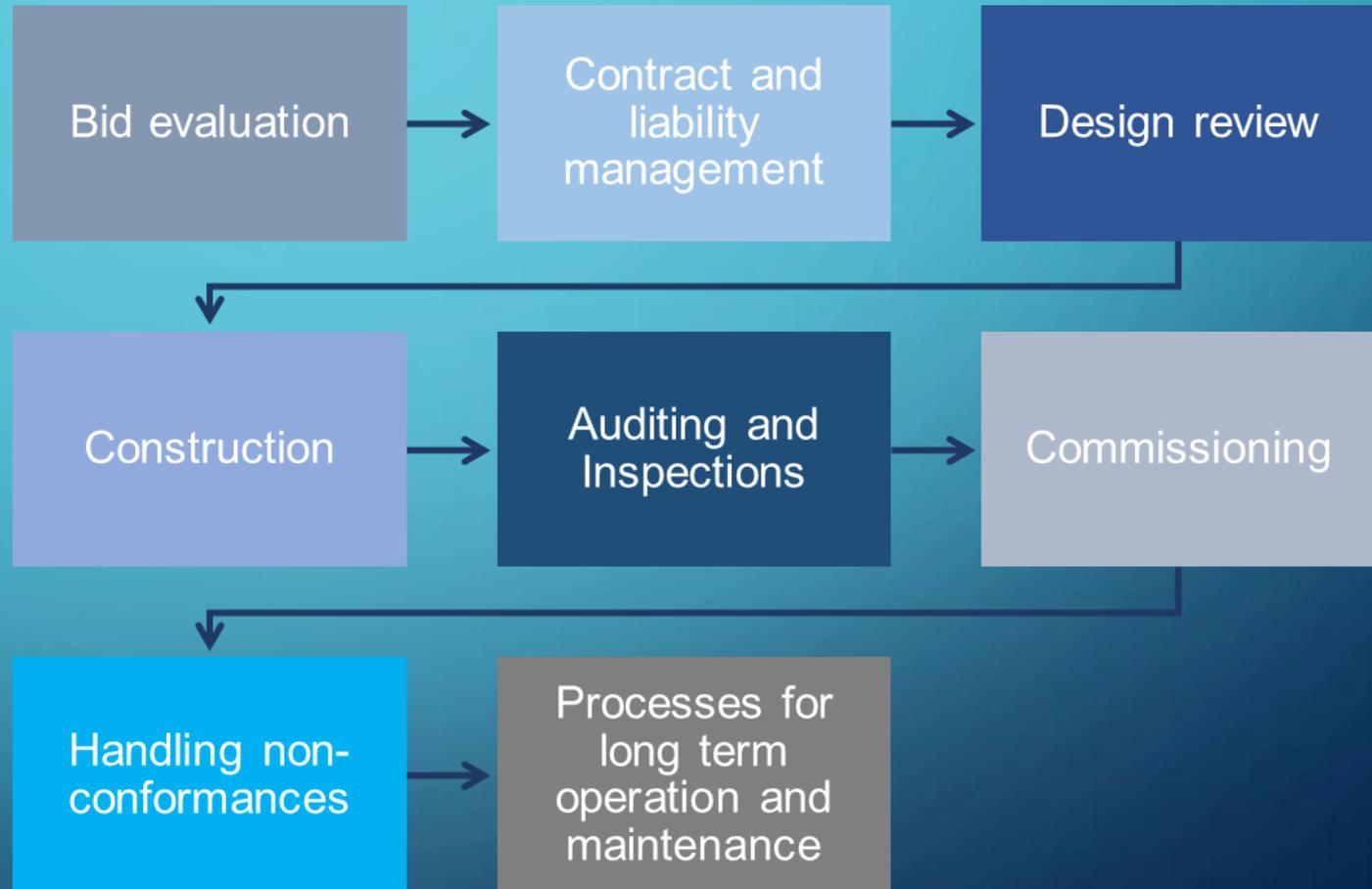
- Improve NPG's Intranet
- Annual Leave Management
- Internal Communications
- Knowledge Management
- NPG Data security

Others

- Strong Safety Culture
- Human Resources Management
- Quality Management Systems
- Etc.

NEXT STEPS IN IMS DEVELOPMENT

Plans for Phase 3 Processes



LESSONS LEARNED AND SUGGESTIONS

Challenges

- One challenge faced by the IMS unit is the lack of IMS-specific training programmes.
- Most IAEA documentation on IMS development are generalized. In this regard one-on-one sessions with review mission experts are hugely beneficial for providing practical guidance

Lessons Learnt

- It is always beneficial to approach the implementation of the IMS in a phased approach
- Keep the number of documents as minimal as possible and involve at the development stage, the personnel who will be involved in the implementation of processes .
- Appoint an 'IMS compliance' officer to be monitoring and drawing attention to violations in compliance during early stages of implementation

LESSONS LEARNED AND SUGGESTIONS

- Provision of broad-based experience sharing platform especially for new embarking countries.
- Develop strategies for transforming tacit knowledge into explicit knowledge.
- Work on knowledge application and utilization
- Develop assessment tools and methods for assessing and continuously improving Management system, safety culture and nuclear leadership.
- Develop and integrate QAQC programme with the management system.

Thank you





Webinar # 4

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes

29 August 2023

Webinar Series on Nuclear Infrastructure Publication Updates



Nuclear
Infrastructure
Development



Aug. 2023

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes



Mr Sherif Bakr Ahmed

- Quality & Audit Department Head, Egyptian Nuclear & Radiological Regulatory Authority (ENRRA).
- Over 20 years' experience in the field of the Integrated Management System (IMS), organization excellence, IMS standards, IMS audit activities, organizations development, establishment, prepare , development, monitor and control of organization's IMS (procedures, manuals and work instructions), Processes improvement, define and follow-up objectives and KPIs, etc.
- Hold a Doctorate of Business Administration dated 2018, achieved a Master's Degree in Quality Management System dated 2010 and hold his B.Sc., Mechanical Engineering, dated 2003.
- Certified as Manager of Quality/Organizational Excellence, lead Quality auditor ISO 9001, Six Sigma Green Belt and also OHSAS 18001:2007 /internal auditor & Achieved of Certificate of Completion of Prep. course of Project Management Professional (PMP).





ENRRA Integrated Management System

Dr. Sherif Bakr
Head of Quality & Audit Department
(ENRRA)

Agenda for the session

- **Overview of ENRRA**
- **ENRRA Vision, Mission, and Strategic Objectives**
- **Overview of ENRRA Intergraded Management System (IMS)**
- **ENRRA IMS Assessment**
- **ENRRA Main Achievements Related to IMS**
- **Comments and Questions**

Overview of ENRRA

- ENRRA stands for the Egyptian Nuclear and Radiological Regulatory Authority which represents the national regulatory entity established according to Nuclear law no. 7 for the year 2010 and its executive regulation.
- This law aims at setting a legal framework to regulate all the nuclear and radioactive activities in the Arab Republic of Egypt in a way that ensures the safety and protection of human beings, property, and environment against the radioactive hazards.
- Law No. 211 was promulgated in 2017 to amend Law NO. 7 to reinforce ENRRA independence and effectiveness.

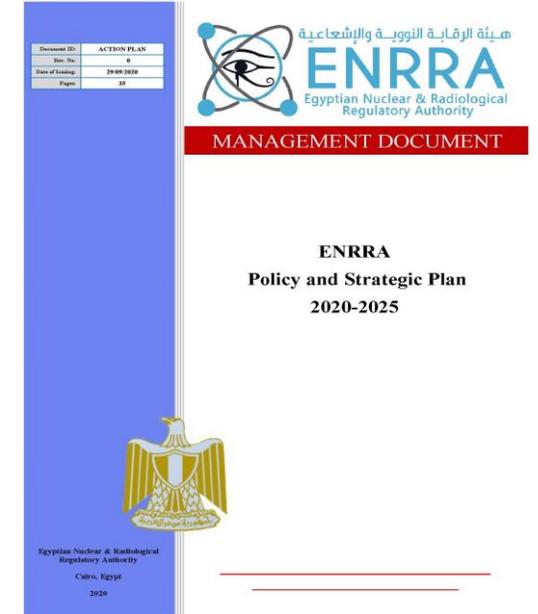
ENRRA Vision & Mission



To be a distinguished regulatory authority on the regional and international level for nuclear and radiological safety, nuclear security, and nuclear safeguard, and to develop strong safety and security culture to gain the public trust.



ENRRA shall carry out its regulatory mandate, related to N&R activities; to ensure that atomic energy is used for peaceful purposes and to protect humans, property and the environment from the harmful effects of ionizing radiation



Issuance of the ENRRA's
Strategic Plan (2021/2025) in
2020

ENRRA Strategic Objectives



Strengthen the national regulatory system related to nuclear and radiation safety, nuclear security, nuclear safeguards, and nuclear and radiological emergencies.



Capacity Building in the field of Nuclear and Radiation Control.



Enhance the effectiveness and efficiency of the ENRRA Management System



Continuously improve the Engagement of Interested Parties and Public Awareness

Overview of ENRRA IMS

- Within the ENRRA strategic plan 2020:2025, which was issued in 2020, and to achieve the ENRRA vision and conduct its tasks efficiently and effectively within the framework of the core values on which the ENRRA is based,
And to achieve the ENRRA third strategic objective: “Enhance the effectiveness and efficiency of the ENRRA Management System”
- And Within the Directions of the Egyptian Government and international trends toward transformation, the authority’s management decided to :
 - ✓ *Establishing An Integrated Management System Consistent with the legal requirements, latest international management systems Standards, and the publications of the IAEA.*
 - ✓ *Establishing an electronic management system and automating all the Authority’s processes as an important tool to speed up, organize and monitor all the Authority’s operations and reduce human errors.*

Integrated Management System

To Planning, Organizing, Leading, Controlling all ENRRA activities and resources in an integrated manner to achieve the authority objectives through a systematic way of doing work (manuals, process procedures, work instructions, etc.)

Contains a set of Manuals, Procedures, Work Instructions, Forms, etc.

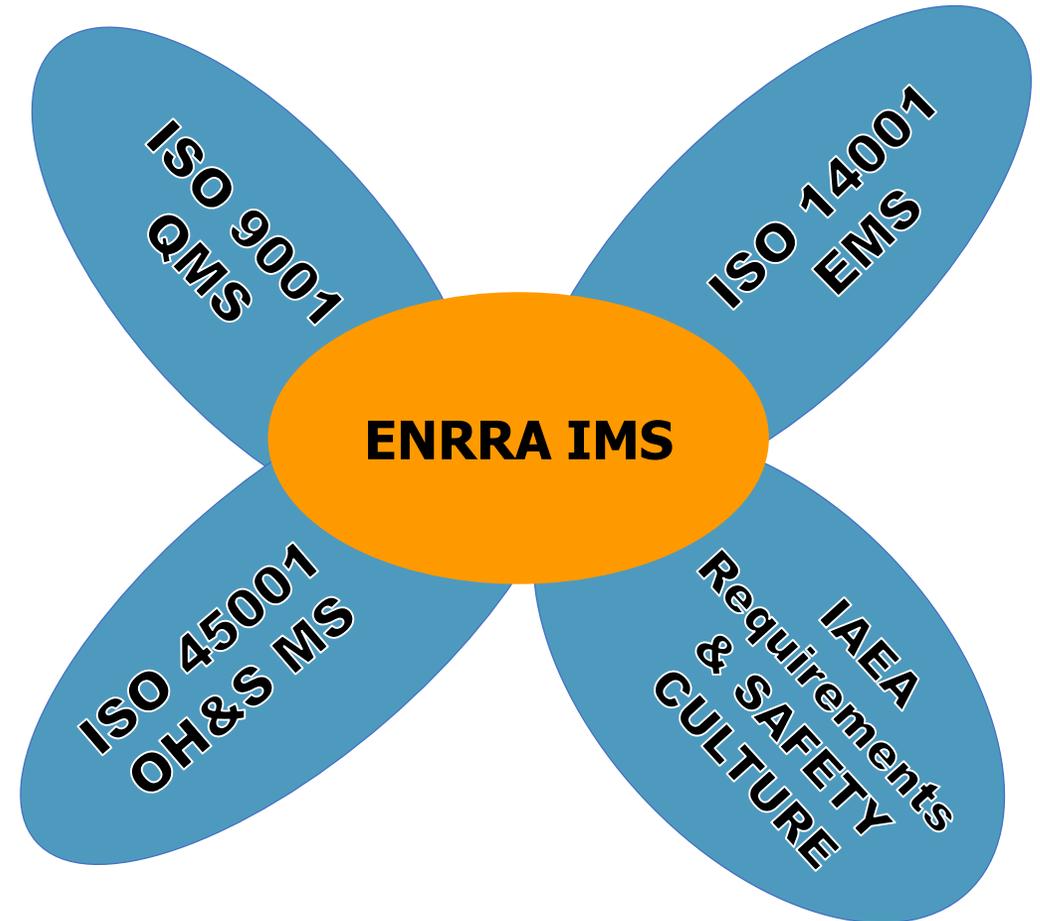
ENRRA Established its Integrated Management System

With the support from ENRRA's TSOs

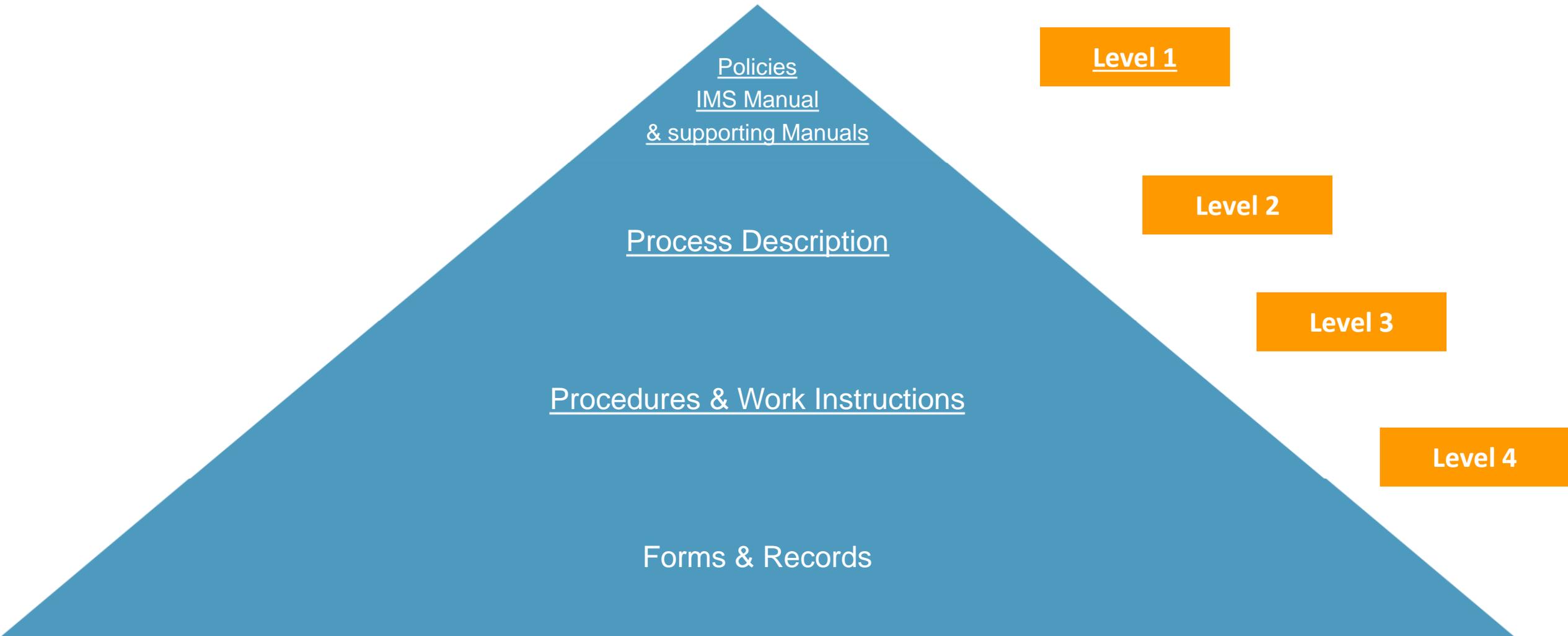
Consistent with all Legal Requirements, International Standards (ISO 9001:2015), (ISO 45001:2018), (ISO 14001:2015), and IAEA Publications

ENRRA Established its IMS based on the principles and the requirements set forth in the following :

**ENRRA Management
System certified ISO
9001:2015 from
March,2023**



Integrated Management System



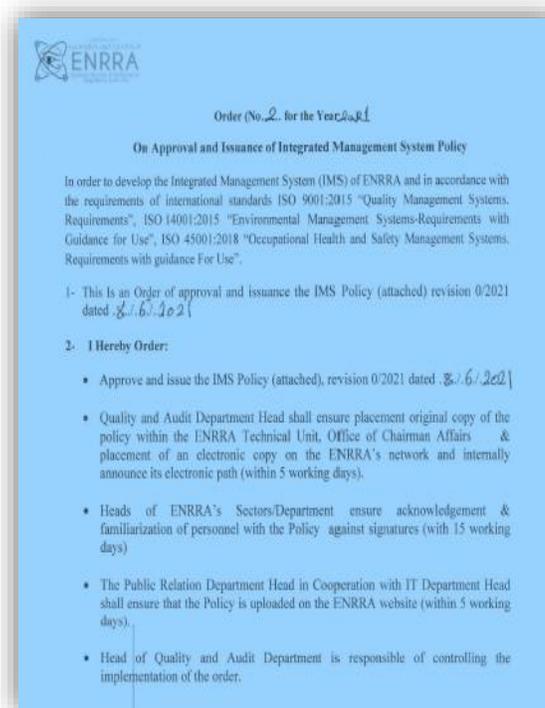
ENRRA IMS Manual

IMS Manual Sets forth the major principles of arrangement and development of the IMS, describe how is the IMS designed, Manual specify the Scope of the IMS, to Ensure and Demonstrate ENRRA commitment towards Legal requirements , international standards and IAEA Requirements and guides,

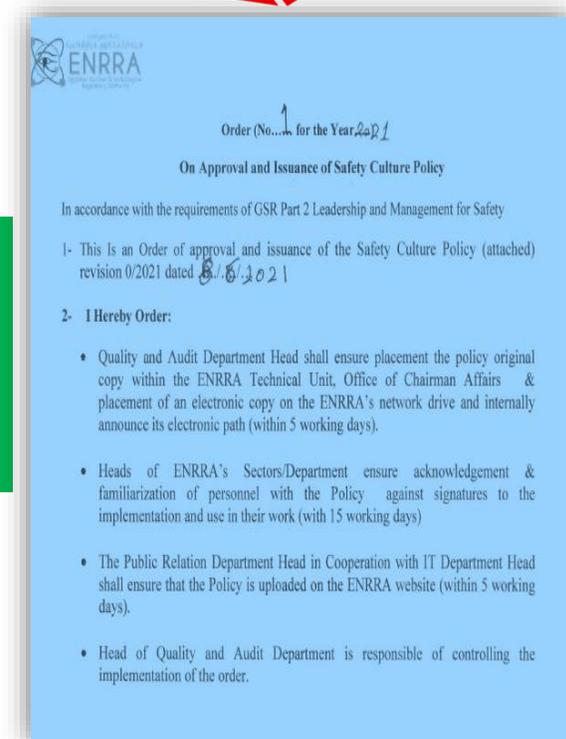
The manual is also designed in order to become a useful addition to the "External Communication Methods"

The manual is a very good management tool to keep ENRRA employees aware of their responsibilities within ENRRA IMS .

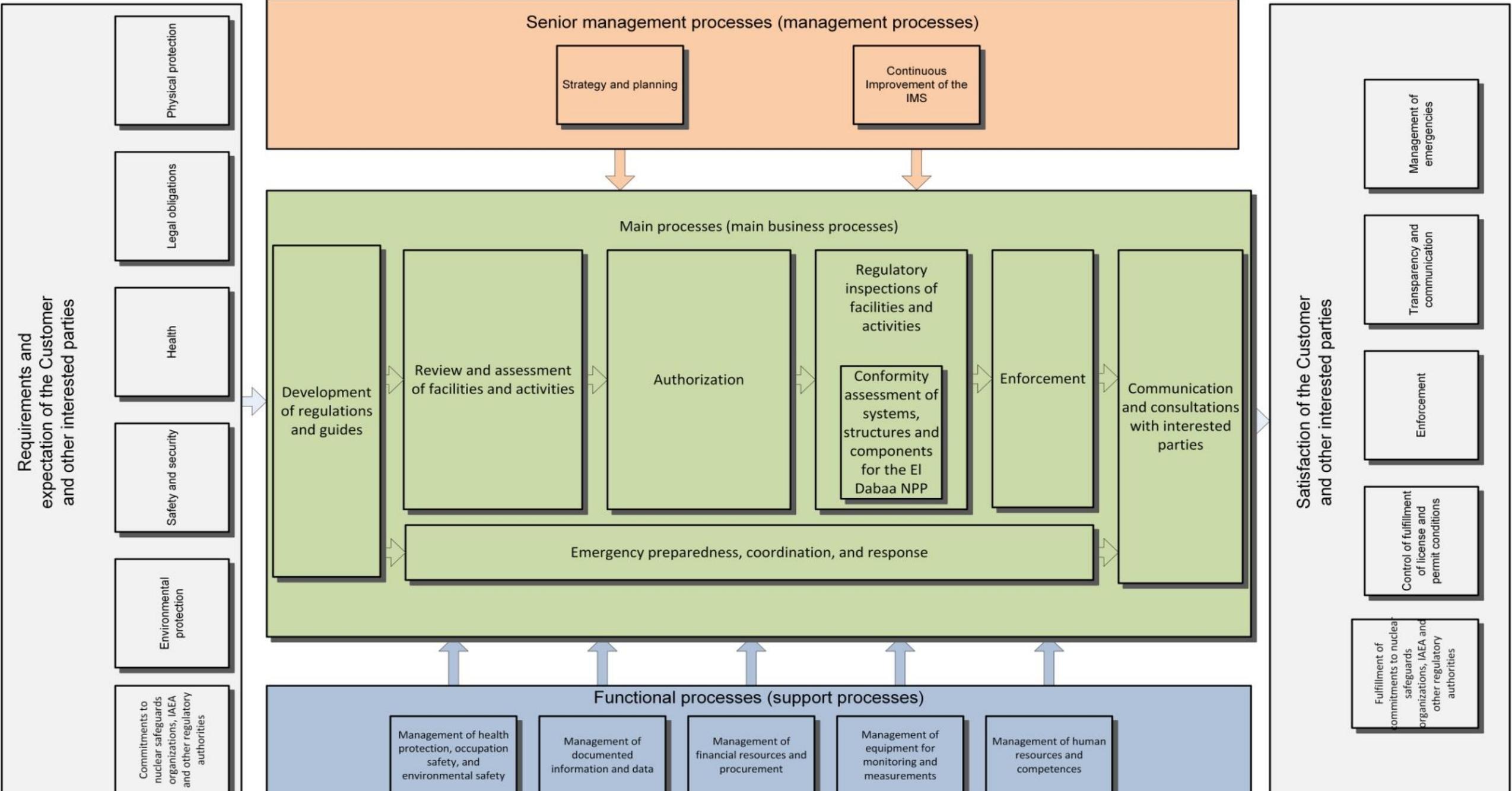
Describes the ENRRA processes (Core & Support) and describe the interactions and sequence of these processes



IMS & Security Policy and Safety Culture Policy



ENRRA IMS Process Map



Process Descriptions

Purpose of the Process			
Main Objectives of the Process			
Scope of the Process			
Process Owner			
Interested Parties			
Inputs			
Outputs			
Resources	Human	Industrial Environment	Infrastructure
Procedures and Instructions			
Interfacing Processes			
Documents Affecting the Process			
Measured Value (Criterion of Effectiveness)			
Monitoring Period			
Target Indicator of the Measured Value			
Management of risks/opportunities	Standards Predicted risks/opportunities	Actions to manage standards Risk/opportunities implementation management actions	
Revision Period			

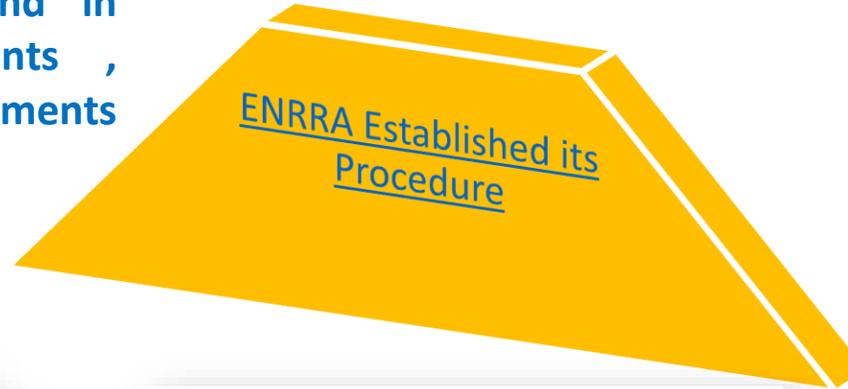
Example of Cover Page

Egyptian Nuclear & Radiological Regulatory Authority (ENRRA)				
				
Development of Regulations and Guides Process Description				
CP-RG-001				
00	30/12/2021	 ENRAD Head	 Legal Affairs Dept. Head	 Chairman
Rev.	Date	Prepared By	Reviewed By	Approved By
<small>Development of Regulations and Guides Process Description CP-RG-001 Rev. 0/2021</small>				

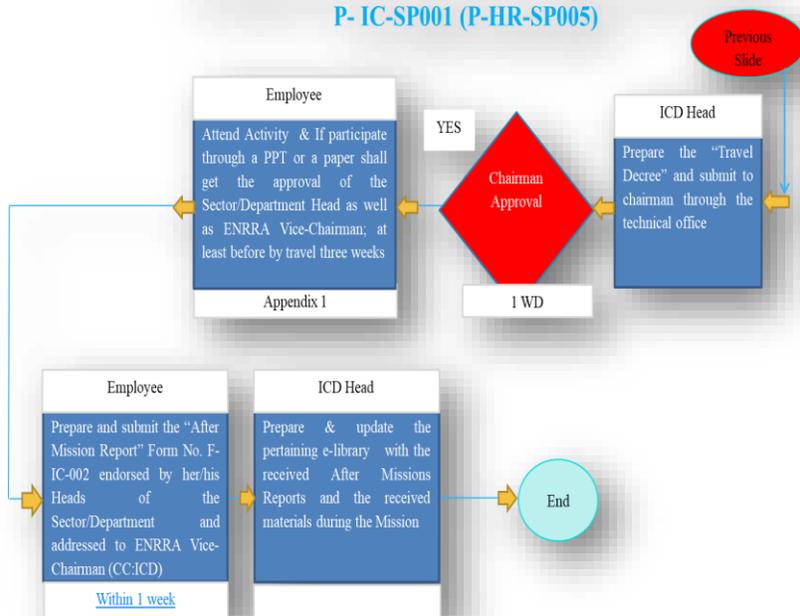
ENRRA IMS Procedures

Its Describes for each process simply : Who, do what, when, where and how for each activity in controlled manner and in compliance with Legal Requirements , International standard and IAEA Requirements and Guides.

ENRRA Procedure shall : End to end process / Simple
Procedure structure:
Cover Page/ Second Page/ TOC/ Purpose/ Scope /References / Abbreviations and definitions/ Responsibilities/ Procedures / Documentation and records/ KPIs/Flow Chart / Responsibility Matrix



Managing International Mission of ENRRA Staff Procedure
P-IC-SP001 (P-HR-SP005)



10. RESPONSIBILITY MATRIX

Step No.	Activity	Duration	QAAD Staff	QAAD Head	Process Owner/Dept. Manager	Stakeholder	Sector Head	Vice Chairman	Chairman
1	Preparation and Control of IMS Documents		R	R/A	R	R	R	I	
	Send IMS modification / Initiation request		I	I	R	-	R	-	
	Receive the IMS modification request and categorize (Update of Existing or New)		R	RI	I	-	-	-	
1.1 New Document to IMS									
	Prepare Initial draft Procedure	10 WD	R	I	-	-	-	-	
	Review and approve the initial draft		I	R	-	-	-	-	

Egyptian Nuclear & Radiological Regulatory Authority (ENRRA)

Regulatory Inspection of Nuclear and Radiation Facilities and Activities Procedure

P- IN-CP100

Signature: zakaria Ahmed

00	15/03/2021	Inspection and Enforcement Dept. Heads & QAAD Head	Head of Nuclear Installations safety Sector Head & Safety of Radiation Facilities and Activities Sector Head	Chairman
Rev	Date	Prepared By	Reviewed By	Approved By

Regulatory Inspection of Nuclear and Radiation Facilities and Activities Procedure P-IN-CP100 Rev.:2021

ENRRA Electronic Management System

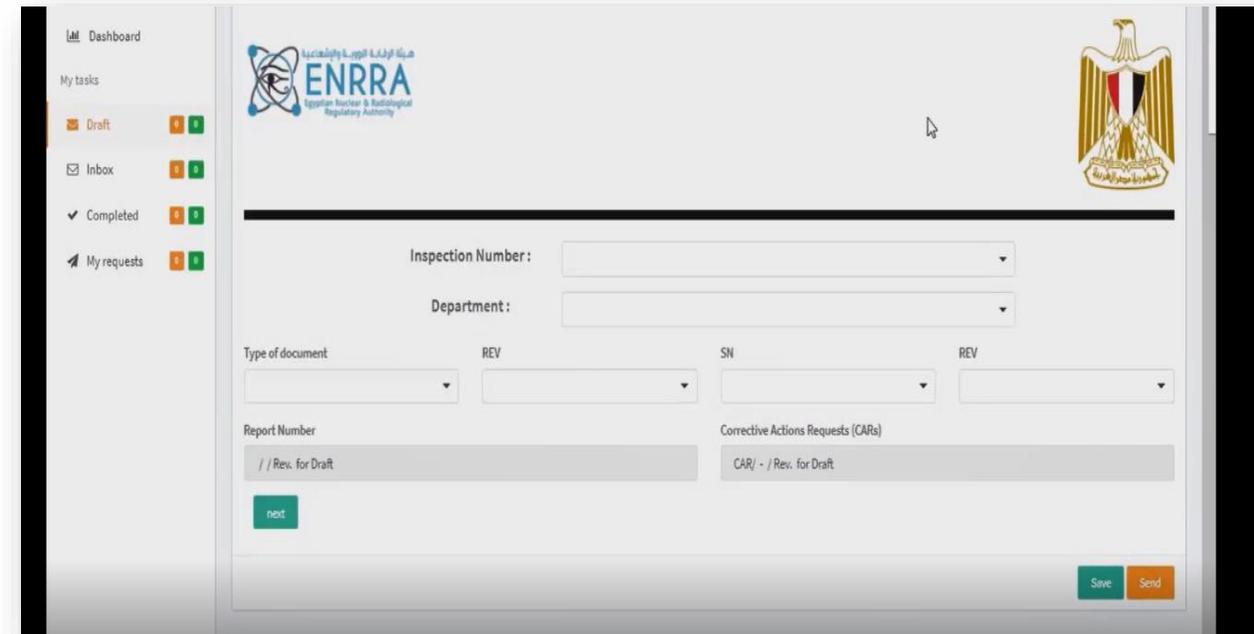
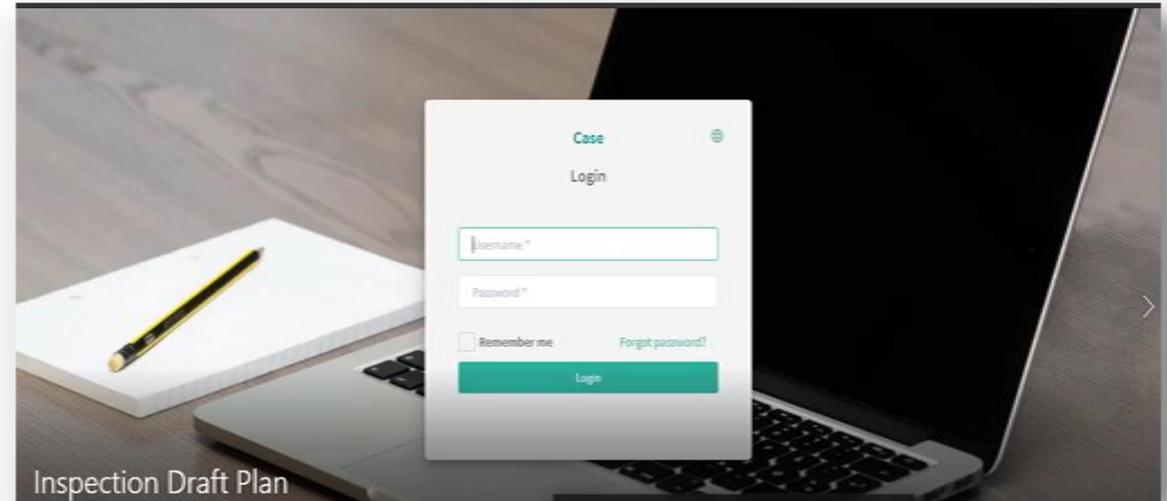
In accordance with the Egypt strategic plan and the national & international directions towards the digital transformation, ENRRA start to digitalize its organization processes and workflows management as its very important tool to control the organization process and reduce the human error.

Finalizing More Than 70 % of
Electronic Management System

2-Activation of the DMS

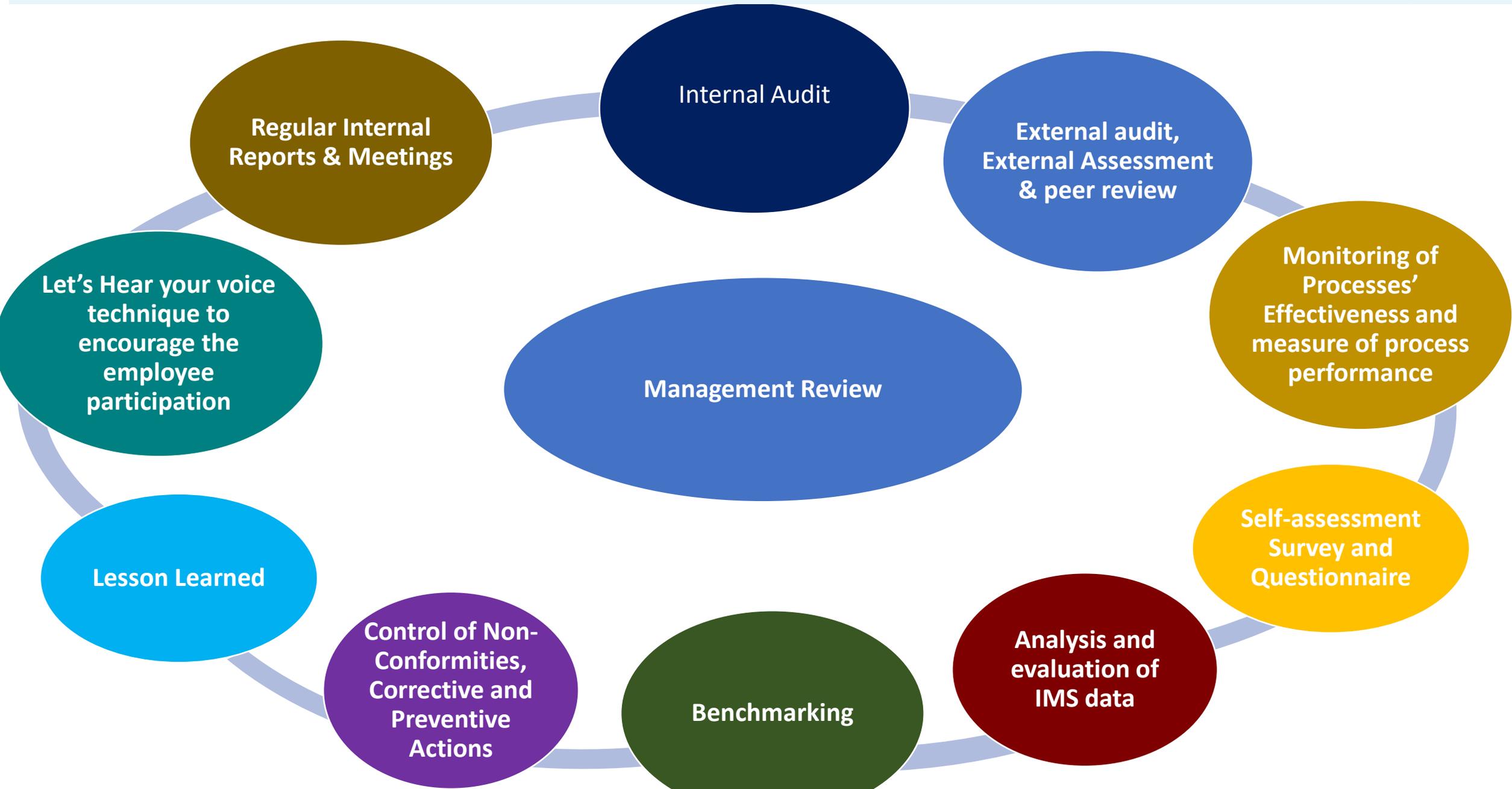
2. Providing training and awareness
to ENRRA staff on how to
implement the EMS

ENRRA have ambition plan to complete the digitalization
of its processes during the year 2023.



- ENRRA applies suitable methods for monitoring, analysis, and assessment of the Integrated management system.
- ENRRA determines, plans, and carries out necessary activities to control the implementation of the Integrated Management System (IMS), establishes the methods of monitoring, analysis, evaluation and assessment necessary to ensure reliable results and the effectiveness of the IMS . Methods of monitoring, analysis, evaluation and assessment as well as the degree of their application, are indicated in relevant ENRRA IMS documents.

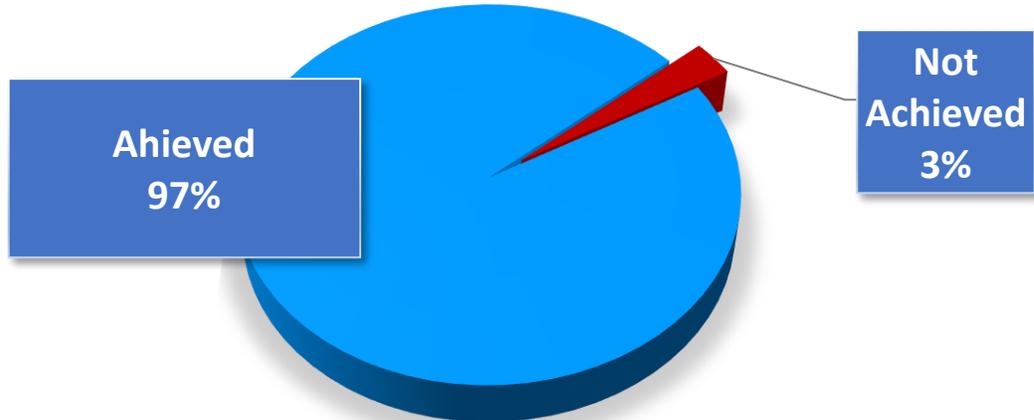
ENRRA IMS Assessment Methods



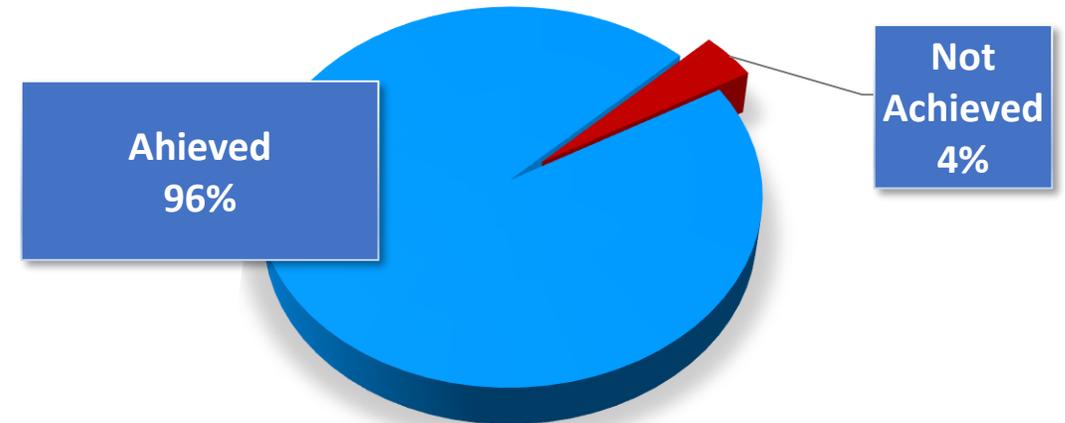
Monitoring of Processes' Effectiveness and Performance

ENRRA Strategic Objectives achievement for the year 2022

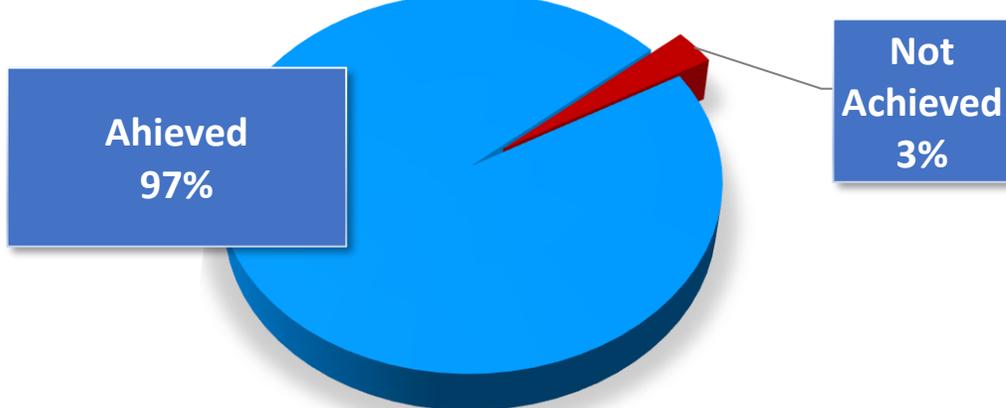
Second Strategic Objectives achievement during 2022



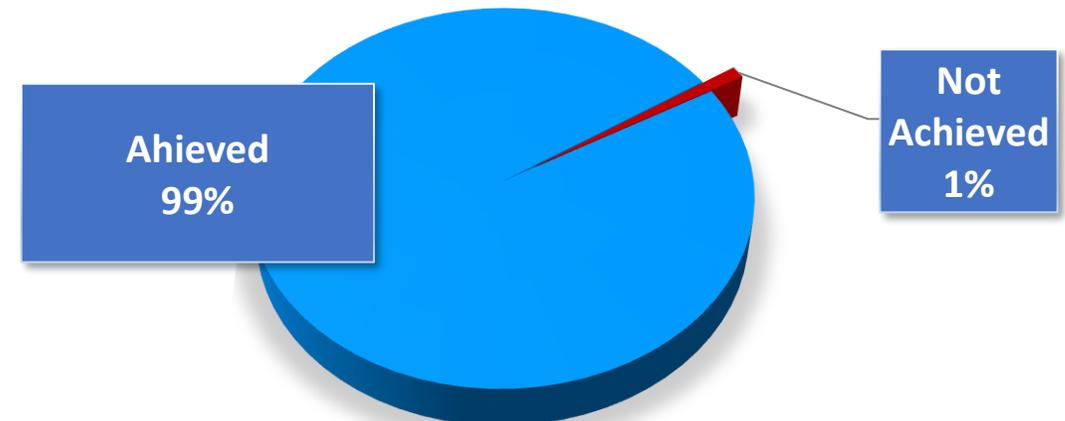
First Strategic Objectives achievement during 2022



Fourth Strategic Objectives achievement during 2022



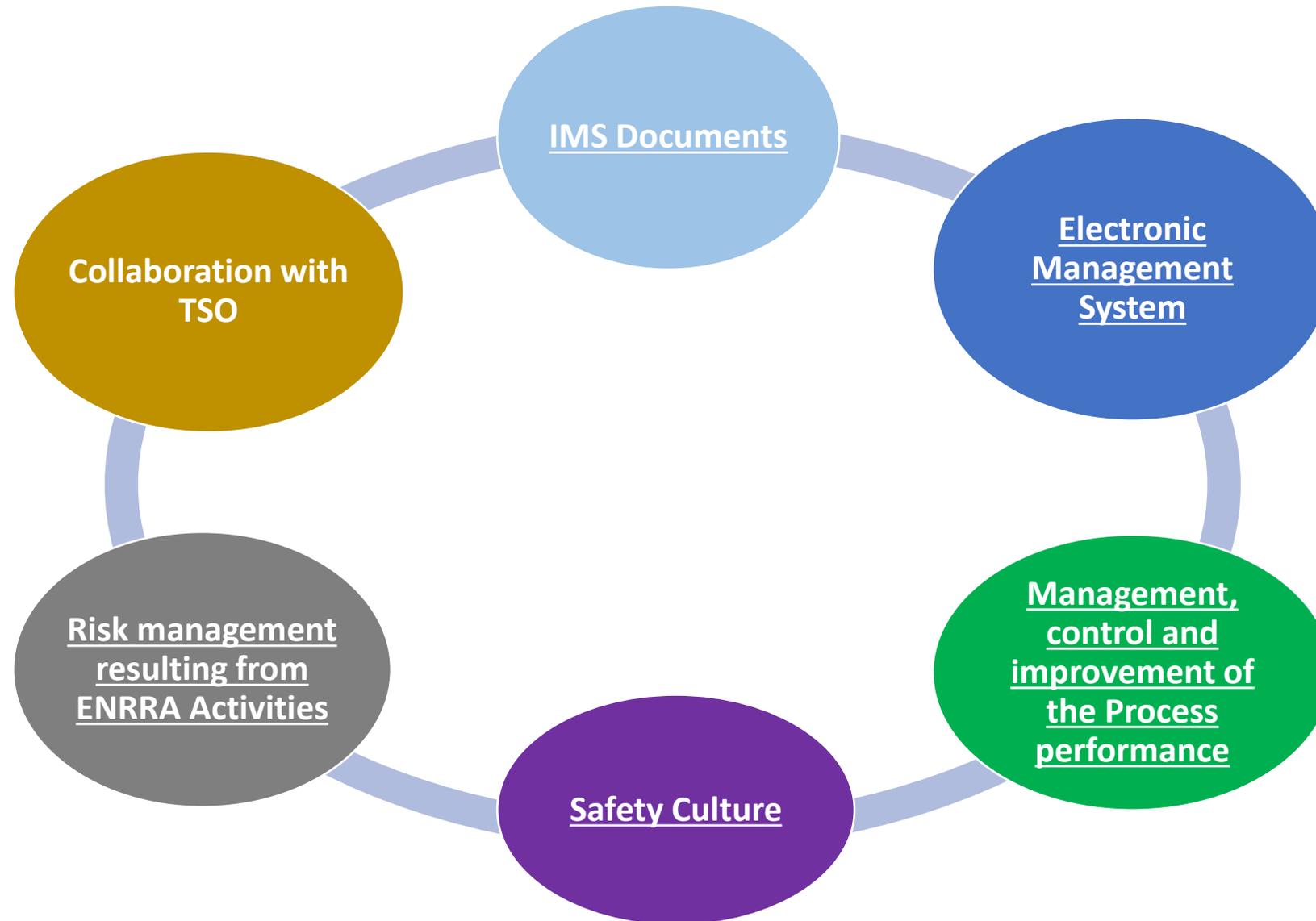
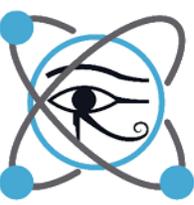
Third Strategic Objectives achievement during 2022



ENRRA Main Achievements Related to IMS



Enhance the effectiveness and efficiency of the ENRRA IMS



Quick Tips

To establish Organization IMS

- **You should have a plan** : Organization Management System should be established based on the organization's strategic plan, vision, mission and its objectives.
- **You should have a references**: Organization Management System should be established complying with international standard and IAEA publication.
- **You should know why and how** : Organization establish, document , implement and develop its IMS To Planning, Organizing, Leading, and Controlling all organization activities and resources in an integrated manner to achieve the authority objectives through systematic way of doing work (manuals, processes, procedures and work instructions, etc.)
- **You should monitor your progress** :: what achieved comparing with your plan
- **You should aligned with the modern technology and world trends “digital transformation”** : you should digitalize of your management system.
- **You should regularly assess your Organization IMS**: to improve the Organization IMS and keep it sustaining the organization should regularly assess its IMS



Webinar # 4

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes

29 August 2023

Webinar Series on Nuclear Infrastructure Publication Updates



Nuclear
Infrastructure
Development



JUNE 2023

Development of Management Systems in Countries Embarking on New Nuclear Power Programmes



Q&A Session



Ian GRANT
Canada, Consultant



Tomasz TRZCINSKI
Poland, PEJ



Katarzyna Kaczmarczyk
Poland, PAA



Charles Kofi KLUTSE
Ghana, GAEC



Sherif Bakr Ahmed
Egypt, ENRRA



Upcoming Webinar

Development of Stakeholder Engagement in Nuclear Power Programmes

14 September 2023
14:00 – 15:30 (CET)

The materials from previous webinars under this series are available here: [Nuclear Infrastructure Publication Updates Webinar Series | IAEA](#)



Nuclear
Infrastructure
Development



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

Thank you!

