



IAEA

International Atomic Energy Agency

Knowledge Management Strategies and Techniques

John Roberts

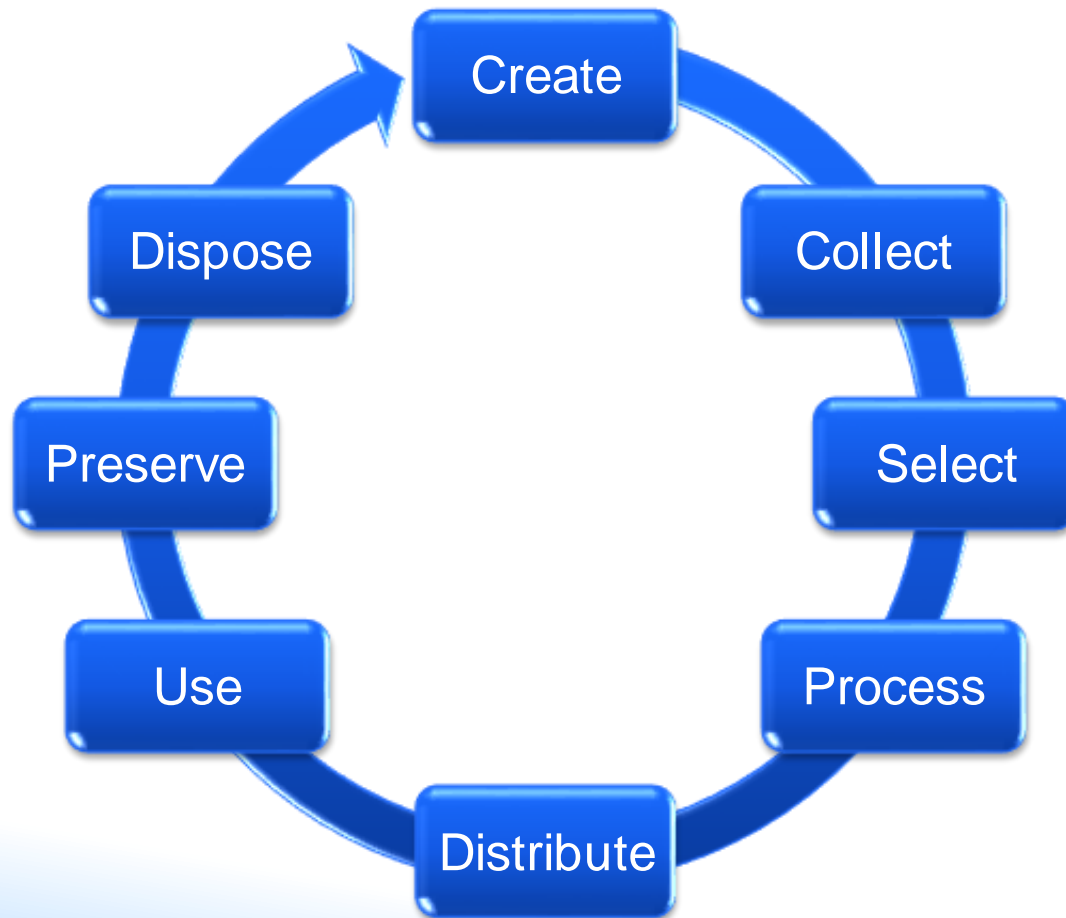
9th June 2022

IAEA Technical Meetings on Fission-Fusion Synergies

j.w.roberts@iaea.org

What is a Knowledge Management?

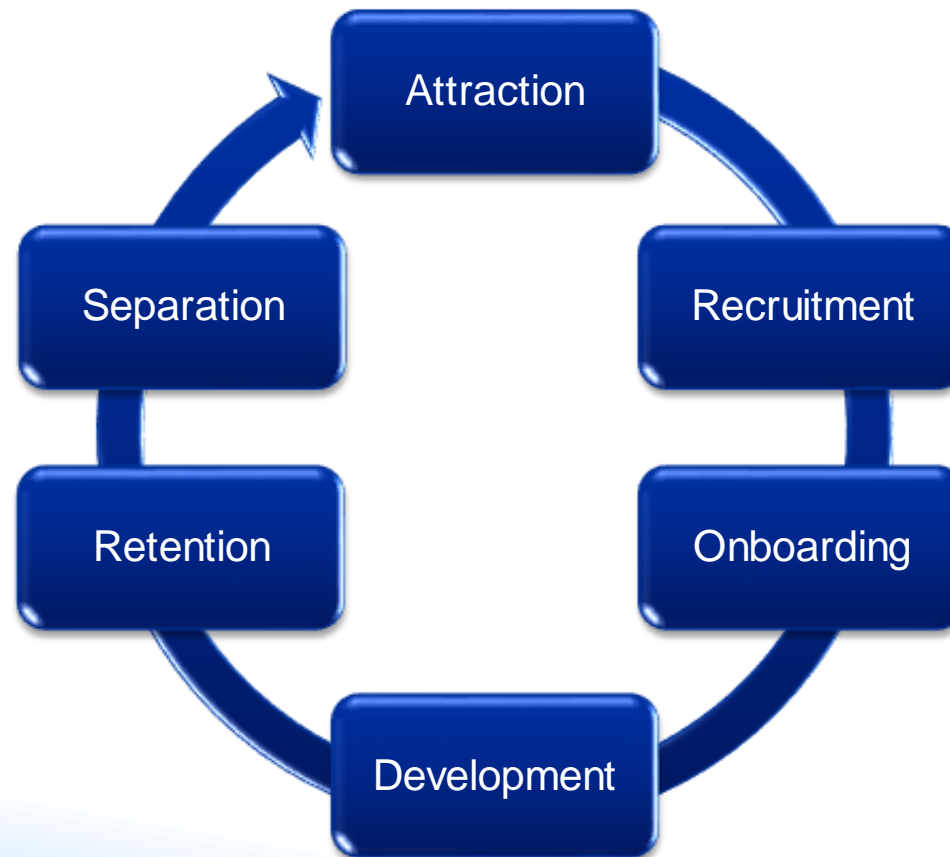
- Coordinated, integrated, systemic practices and activities, which enable and promote effective knowledge processes and ensure adequate knowledge assets as needed to achieve organizational goals



The Information Lifecycle

What is a Knowledge Management?

- People are just a temporary part of many processes and projects
 - Particularly relevant for industries such as nuclear



The Employee Lifecycle

Fission Fusion Synergies

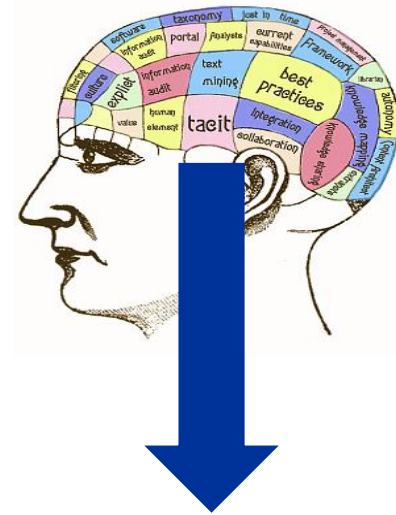


- Balance of plant
 - Fusion can benefit from fission, coal and gas industries
 - Steam processes
 - Instrumentation and Control
- Reactor Synergies
 - Materials in harsh environments
 - Neutronics
 - Identification of joint technological challenges
- Plus
 - Manage the knowledge, skills and competencies of the workforce

Tacit Knowledge Capture

- How can tacit knowledge be captured so that it can be shared and therefore contribute to the success of the organisation and/or facility?
 - After Action Reviews
 - Mentoring
 - Coaching
 - Communities of Practice
 - Interviews
 - Process Mapping
 - Video Recording

Tacit Knowledge



**Documented
Knowledge**

What is 'at Risk'?

- Actual Risk or Perceived Risk?
- **Critical Knowledge** v/s Significant Knowledge v/s Useful Knowledge?
 - The knowledge that is considered to be significant, vital and essential for a particular task or activity that is linked directly to the management of **operational safety requirements and successful commercial business performance**. The knowledge established in the context of a particular position that is deemed to be imperative for incumbents of the said position to possess before being allowed to perform associated duties and tasks independently.
- Existing processes and activities that are already in place protecting the organization?
 - education and training (that includes mentoring and coaching)
 - procedures and work instructions
 - configuration management controls
 - Integrated management systems

Fusion Critical Knowledge ?

- Design considerations
- Safety case management aspects
- Regulatory
- Licensing
- First of a kind processes and applications
- ...

Nuclear Knowledge Management



- Knowledge movement through an organisation
- Succession Management
- Knowledge loss risk assessment
- Knowledge capture methods
- Competency mapping
- Knowledge sharing culture
- Lessons learned and corrective action programmes
- Information management and preservation
- Knowledge Organisation Systems

Information Management

In terms of technology, information management encompasses many different systems

Information management is, however, much more than just technology

It is also about the information itself, including the structure of information, metadata and content quality



The IAEA Archive of old Magnetic Tapes
100,000 magnetic tapes → 10 TB

Selection of Information for Preservation



- Why Select?
 - Content
 - Storage is not equal to Preservation
 - High costs and limited budget
 - Maintenance cost
 - Legal issues
 - General Data Protection Regulation (GDPR)
- Evaluation
- Prioritization by **Value, Use and Risk**
- Describing Information with metadata
 - Metadata is structured data about data
 - Metadata is a summary of information about the form and content of resource to facilitate identification and retrieval
- **How can we utilize new IT technologies to help?**

Support for the Fission Community and synergy for the Fusion Community?



Scope of NKM Support

National Level	Organisational Level
<p>The wider educational requirements on a national or regional level</p>	<p>Specialist missions including knowledge management support across a range of organisations; TSOs, government organisations, NPP operators, universities, regulators etc</p>

National Level



Nuclear Energy Management
Foundation School

*Foundation or Advanced
One week online study
Two or one week residential*



Nuclear Knowledge Management
School

*Specialist School
One week online study
One week residential*



Educational Networks

*ANENT, LANENT, AFRA-NEST
STAR-NET
ENEN, UNENE, BNEN, NTEC*

Organisational Level



Knowledge Management Assist Visits

*Nuclear organisations
Nuclear facilities
Education and training providers*



Knowledge Management
Methodology, Processes and
Techniques

*Document publishing
Webinars
NKM Digital Hub*

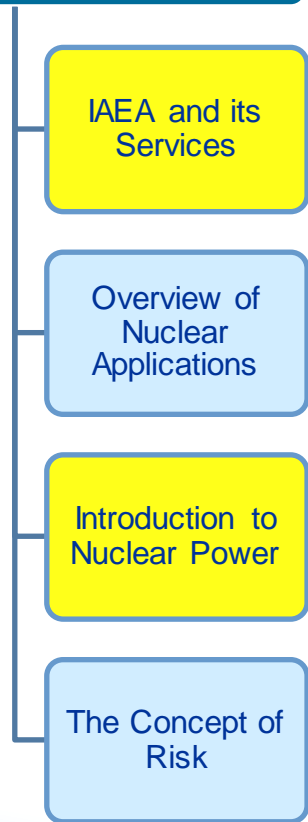


International Nuclear Management
Academy (INMA)

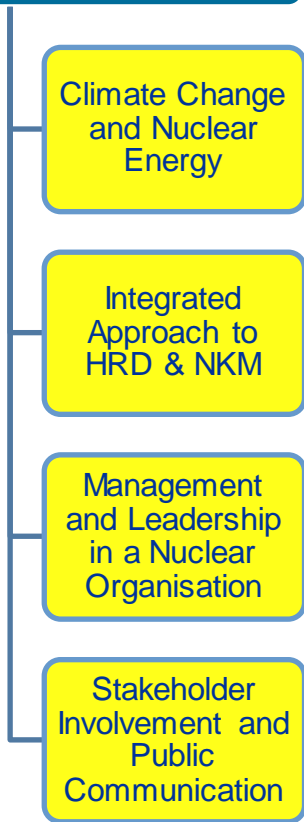
*MSc Nuclear Technology
Management
Programme endorsement
University membership*

NEM School Curriculum

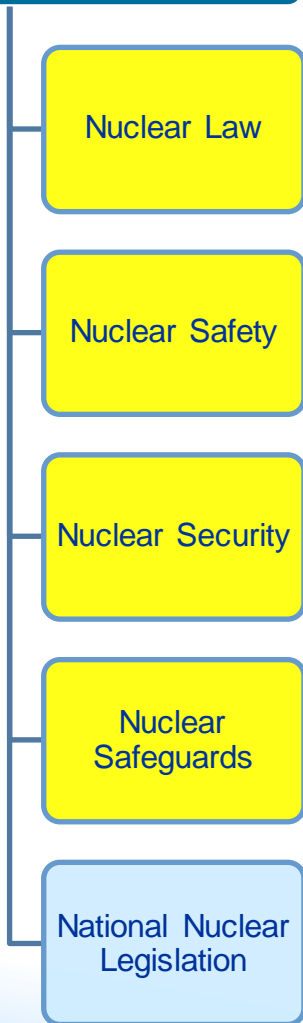
IAEA and Nuclear Technology



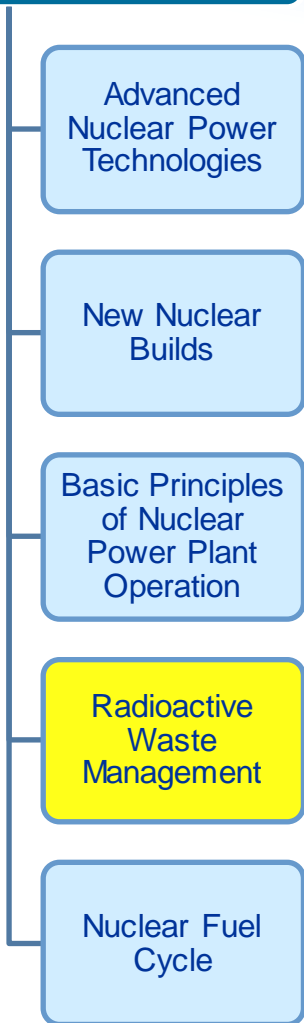
Key Issues and Challenges



IAEA 3S Requirements



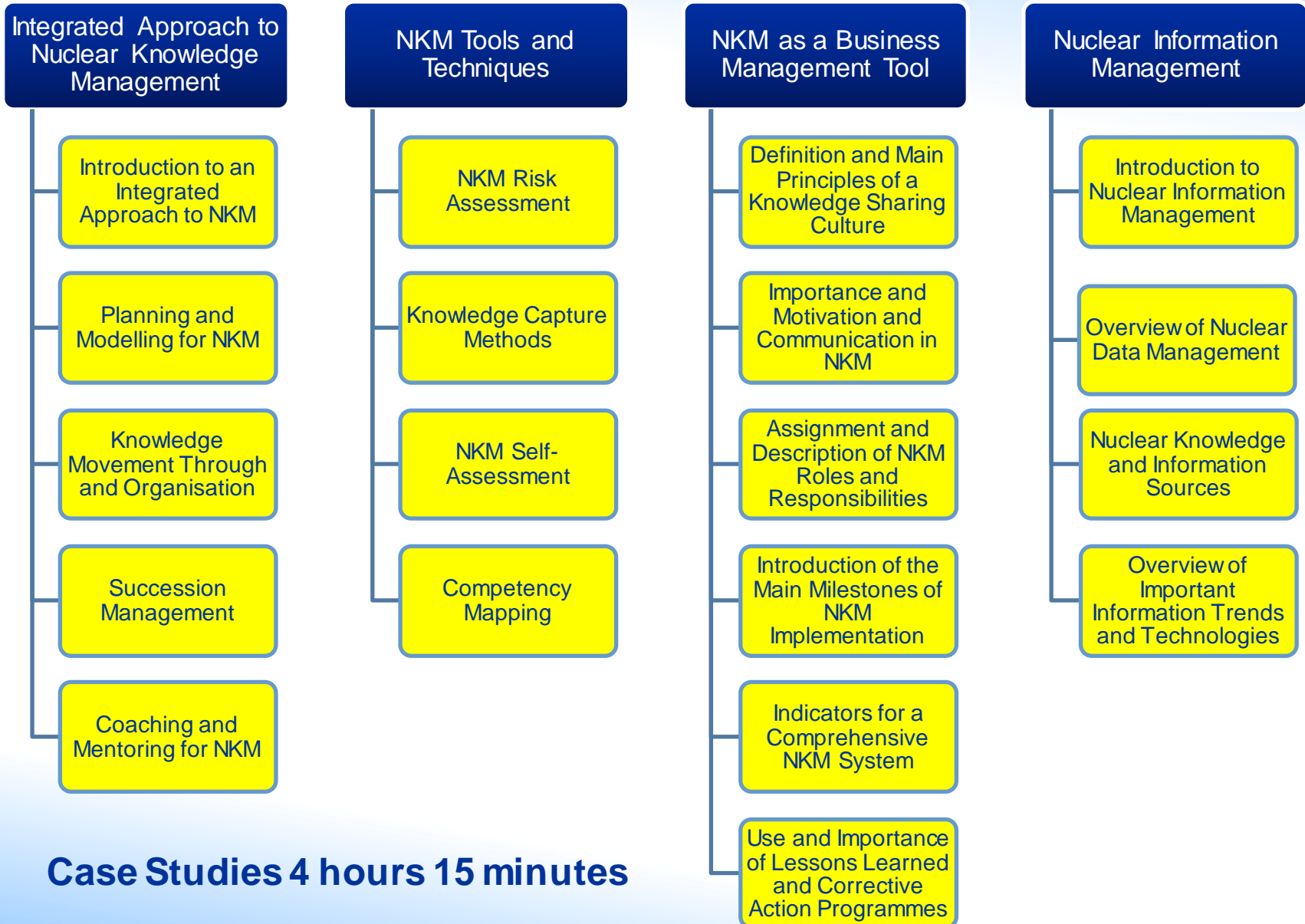
Nuclear Technology Life Cycles



Core Topics – 45%

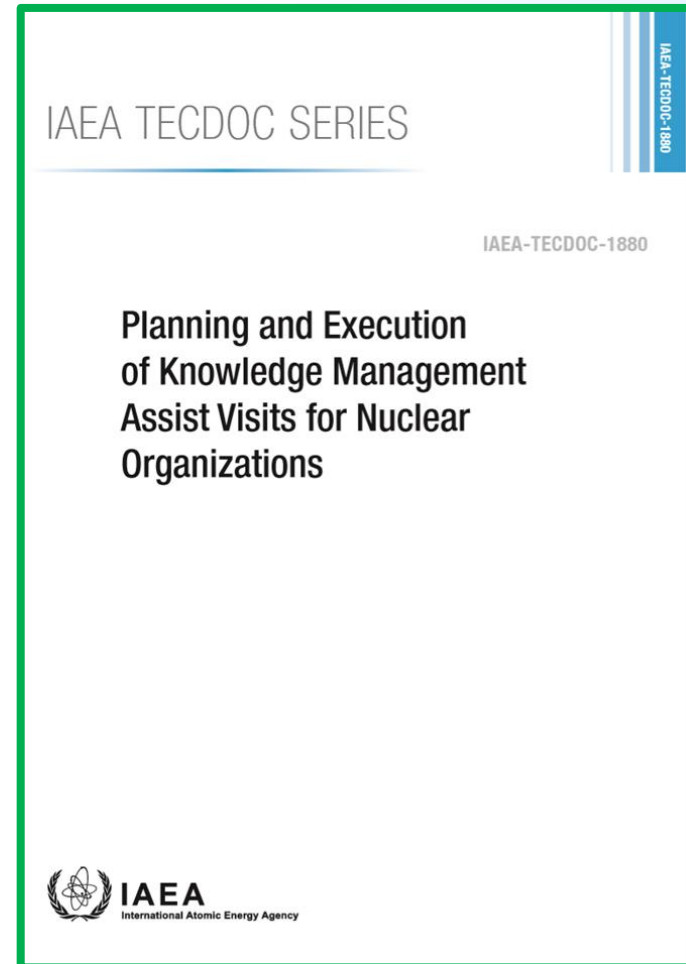
Elective Topics – 55%

NKM School Curriculum



Knowledge Management Assist Visits

- Designed to assist Member State nuclear organizations to have pragmatic knowledge management methodologies that can contribute to both safety and business objectives;
- Reviews the existing knowledge management practices of a nuclear organization using an IAEA developed self-assessment methodology;
- Provides recommendations based on gaps identified with a focus on adding value to the business.



Knowledge Management Assist Visits



Level 1 - KM Awareness and Orientation

An introduction to KM to help establish strategy, policy and future work areas

Level 2 - KM Implementation

To perform an independent KM maturity assessment using the IAEA self-assessment tool and identify actions to implement KM activities/programme

Level 3 - KM Expert Assistance

To provide specialized support on specific KM areas such as improving mentoring and coaching activities or IT infrastructure to facilitate KM, knowledge loss risk etc.

KM Maturity Assessment



Knowledge Management Assist Visits for Education and Training Providers



Level 1 – Programme Establishment

Nuclear or radiological education and training programmes are relatively few or evolving and an introduction to their implementation is required

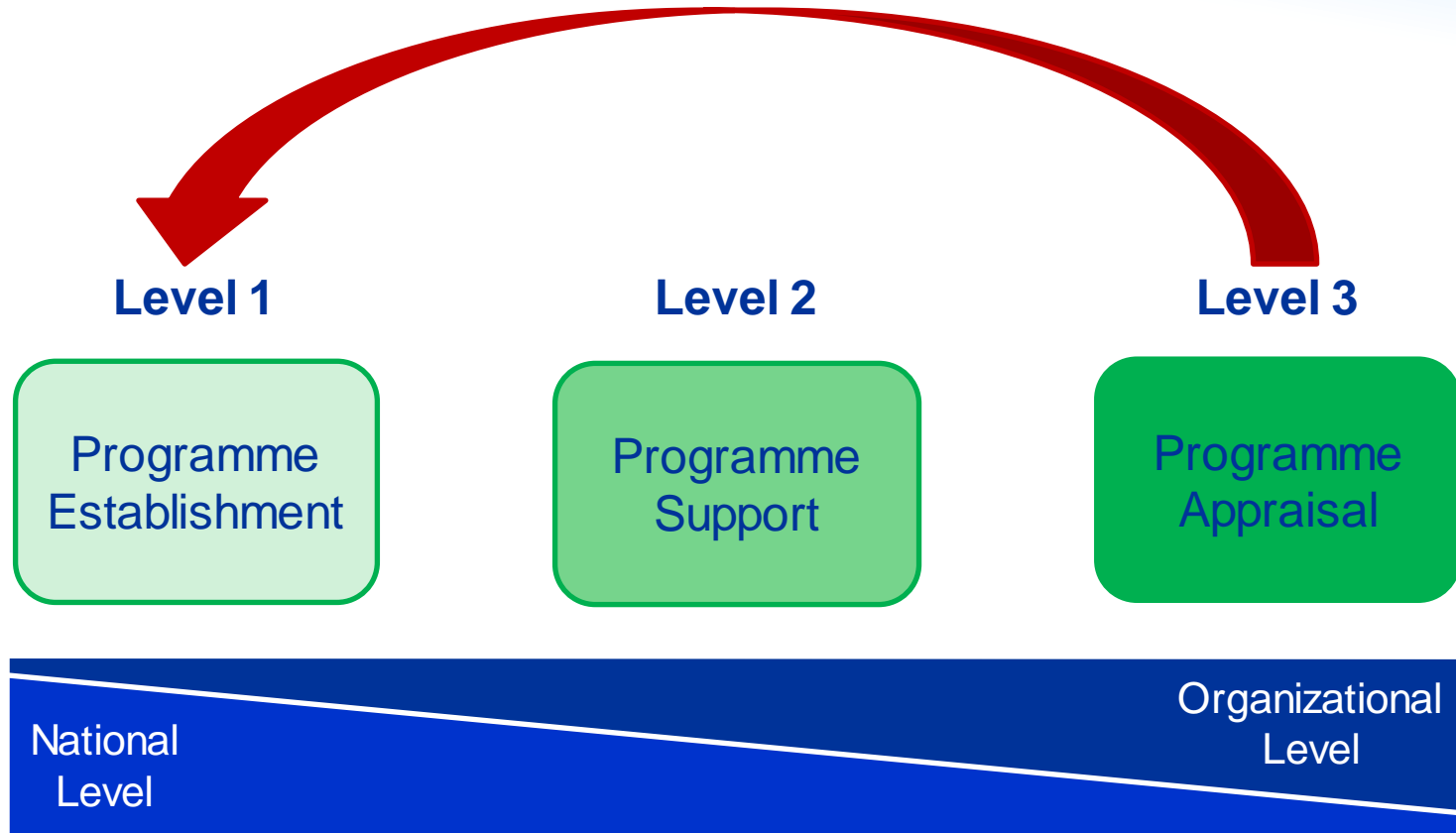
Level 2 – Programme Support

Active nuclear or radiological education and/or training programmes that need assistance in their general implementation and optimisation

Level 3 – Programme Appraisal

Specific high-level assistance to optimise and enhance nuclear or radiological education and training programmes to ensure their sustainability. **They are also used to collect best practices.**

Knowledge Management Assist Visits for Education and Training Providers

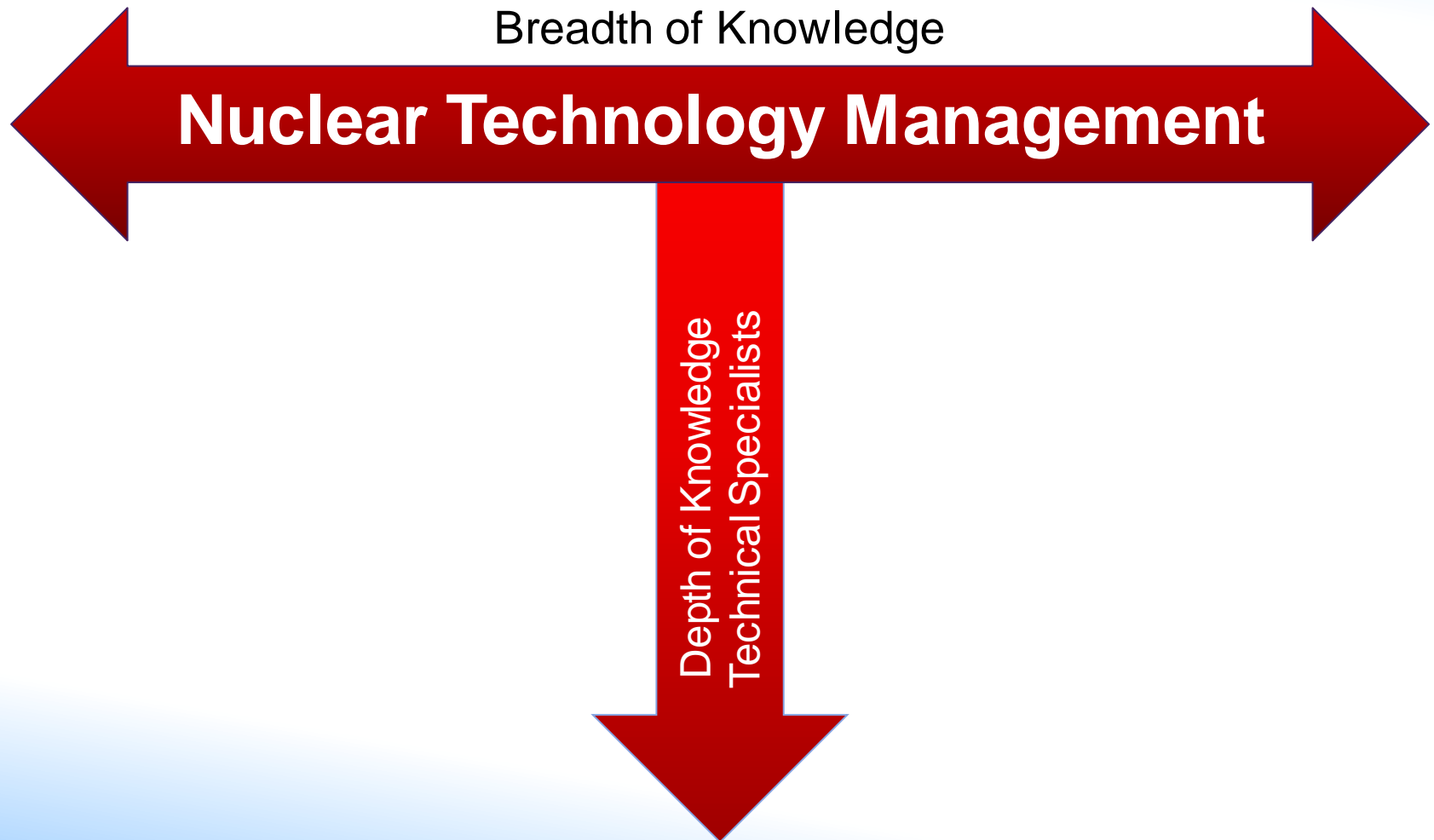


International Nuclear Management Academy (INMA)



- A collaboration between the IAEA and leading universities to develop and deliver master's programmes in **nuclear technology management**
 - **Nuclear and radiological technology** ← **nuclear fusion technologies**
 - Facility design and operation, nuclear fuel cycle, radiological protection
 - **Management**
 - Finance, project management, human performance, safety management
 - **Leadership**
 - Communication, ethics, change management, safety culture
- INMA supports the establishment of master's level **nuclear technology management** programmes based on defined Curriculum Topics and cooperation with local stakeholders
- Establishment of the NTM programme is supported by assist and assessment missions to the university

Aim: 'T Shaped' Leaders



Further Information

- j.w.roberts@iaea.org

- www.iaea.org/nkm



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IAEA CONNECT - NKM

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IAEA Marie Sklodowska-Curie Fellowship Programme

Upcoming Events

Consultants' Meeting to Review TECDOC-1880 on Planning and Execution of Knowledge Management Assist Visits to Nuclear Organizations

20-24 June 2022, Austria, VIC, Vienna

The purpose of the event is to review the draft document, which includes new sections for implementing knowledge management assist visits (KMAVs) to

Show All

Welcome to the Nuclear Knowledge Management Hub (NKMH)

The Nuclear Knowledge Management (NKMH) Hub is a digital platform that offers easy access for IAEA Member States to the latest information on Nuclear Knowledge Management guidance and services to support Member States with operating nuclear facilities and those considering or developing new nuclear programmes.

The hub brings together professionals and experts from IAEA and its Member States to facilitate the sharing of information and capacity building while offering a centralized one-stop-shop access to key NKM areas and resources for information sharing, capacity building and networking. This includes cost-free access to guidance and methodology documents, overview of missions, schools and upcoming activities, presentations from past IAEA meetings, expert workshops and training events, examples of NKM good practices, shared experiences and lessons learned from nuclear organizations, e-learning courses and training materials, and collaborative development spaces for members of working groups and projects.

The hub's public areas are open to all NUCLEUS-registered participants. Access to a particular members-only area is available upon invitation for admission to that project or working group.



Knowledge Management Assist Visits

Schools
NEM NKM

International Nuclear Management Academy

Nuclear Education Networks

Projects and Working Groups



IAEA

International Atomic Energy Agency

Thank you!

