

# Technical Meeting to Develop a Nuclear Knowledge Portal for the Integration of Existing Nuclear Data and Information Bases (in the Agency and in Member States)

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TM Final Report

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## Background

Following the recommendations of several Agency advisory committees, e.g. INSAG, SAGNE, SAGNA, SAGTAC, to address issues related to nuclear knowledge management, in 2002 the Director General convened a meeting on Managing Nuclear Knowledge with senior representatives from Member States<sup>1</sup>.

The meeting prepared a ranked catalogue of recommendations<sup>2</sup> the top item of which urges the Agency to:

*“Integrate existing nuclear data and information bases (in the Agency and in Member States) in the form of an easily accessible Nuclear Knowledge Portal. “*

The importance of creating a knowledge management portal was also emphasized and endorsed in the Nuclear Knowledge Management Session during the Scientific Forum of the IAEA General Conference 2002<sup>3</sup> and in the General Conference 2002<sup>4</sup> welcomed the conclusions and recommendations of the 17-19 June 2002 meeting of senior officials on Managing Nuclear Knowledge. The General Conferences in 2003<sup>5</sup> and 2004<sup>6</sup> recalled and supported these earlier recommendations.

## Objectives

The objectives of the technical meeting were to:

- define the target audience of the Agency’s nuclear knowledge portal,
- define the types of materials to be represented (bibliographic, numeric data, scientific/technical materials, educational materials),
- indicate sources of materials (IAEA, academia, industry, Member States),
- describe the functionality (brokered search, local or distributed storage, discussion groups, nuclear help desk),
- propose if and how the portal should liaison with other knowledge access portals,
- identify concrete sources of materials.

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<sup>1</sup> For details about the meeting see: <http://www.iaea.org/km/pages/meeting1.html>

<sup>2</sup> see: [http://www.iaea.org/km/documents/summary\\_report\\_2002\\_06.pdf](http://www.iaea.org/km/documents/summary_report_2002_06.pdf)

<sup>3</sup> see: <http://www.iaea.org/km/pages/meeting2.html>

<sup>4</sup> see: <http://www.iaea.org/About/Policy/GC/GC46/Resolutions/gc46res11.pdf>

<sup>5</sup> see: <http://www.iaea.org/About/Policy/GC/GC47/Resolutions/gc47res10.pdf>

<sup>6</sup> see: <http://www.iaea.org/About/Policy/GC/GC48/Resolutions/gc48res13.pdf>

## **Report by the scientific secretaries**

The meeting encompassed four distinct phases:

- Agency staff reporting to the external experts about present developments regarding nuclear knowledge management and regarding the development and evolution of portals. Formal presentations were delivered by Mr. Ulfkjaer (NS) and Mr. Mandl (NE).
- Experts reported on their experience with nuclear knowledge portals in their organizations and on related expectations they had regarding the Agency's intentions to create a nuclear knowledge portal.
- A formal brainstorming session was used to generate a pool of ideas in order to inspire the following structured sessions.
- Three structured sessions, each consisting of a sequence of open discussions involving both the external experts and Agency staff and of 'retreats', where the external experts were left alone in order to consolidate ideas between themselves and to draft a report.

All sessions that were public to Agency staff, were facilitated by Mr. Mandl, during the 'retreats' Mr. Workman chaired the discussions. At the end of the meeting, the external experts consolidated their report and presented it to the Agency.

### **Results of the meeting and recommendations**

The presentations and discussions during the Technical Meeting created the basis for a mutual understanding between the external experts and Agency staff, concerning both the present situation concerning 'portal initiatives' within the IAEA and expectations in Member States towards the Agency.

In particular it was acknowledged that:

- The Agency's Nuclear Knowledge Portal (NKP) activities need participation from all Departments, including MTIT for some of the technical aspects.
- Consensus about the allocation of responsibilities must be sought between stakeholders in order to achieve broad acceptance of the project.
- There should be only one entry point to the Agency's NKP, but responsibility and ownership for specific parts of the contents should remain with the organizational units who specialise or focus on the relevant disciplines.
- Based on its expertise and mission, the INIS&NKM Section should have particular responsibility concerning the coordination and overall implementation of the Portal.
- INIS' nuclear thesaurus is a unique resource that should be utilized for the development of a set of common taxonomies. Classification systems, on the other hand (the example of the classification system for the Nuclear Safety Portal was discussed in some detail), must be specific for their intended usage and should merely take advantage of the underlying taxonomies for purposes of automation.
- External contributions from Member States should be sought and encouraged.

Immediate follow up activities should include:

- to develop a formal project brief for the development of an Agency wide nuclear knowledge portal,
- to seek discussions with all departments, concerning the distribution of responsibilities and tasks,
- to re-enforce ongoing work on nuclear taxonomies.

The following 'Report by the Panel of Experts', including the recommendations section and the appendix with the result of the brainstorming, are un-edited by Agency staff.

# Report by the Panel of Experts

## Introduction

The Advisory Panel met from October 4 to 6, 2004. The panel endorses the recommendations made during 2002 by an international meeting on Managing Nuclear Knowledge and the Programme Evaluation of INIS, **that a portal should be developed by the IAEA and that it should be managed by the INIS and Nuclear Knowledge Management Section (INIS&NKMS)**. The portal should include all peaceful nuclear aspects. The panel notes that the reorganization of INIS in 2004 to incorporate the NKM function is aligned with INIS managing the portal.

## Strategy

**The panel's view is that INIS&NKMS staff should work with the staff of MTIT to design the infrastructure of the portal.** Given that the portal is in its initial stage of development, it is necessary to develop a common understanding of what a portal is in a technical sense. **INIS&NKMS should organise the content of such a portal and should seek to develop a taxonomy that would enable effective usage to be made of those contents by all users.**

The panel is in favour of each IAEA department developing its own portal, utilising the portal designed by the Department of Nuclear Safety as a model. However the panel is concerned about the apparent proliferation of stand-alone portals throughout the Agency, and **recommends that a policy be put in place to prevent the further uncontrolled spread of such portals.**

1. **The portal should have a prominent position within the IAEA web site.**
2. **The portal should primarily target the main audience (as identified in Appendix).**
3. **Encourage collaborations and contributions.**
4. **Contributors should retain a degree of ownership of content within the overarching IAEA portal infrastructure.**
5. Identify organizations prepared to contribute, eg their own knowledge repositories.
6. Support consortium for access to expensive journals.
7. Encourage Member States and contributors to develop their own portals using the IAEA portal structure as a model.
8. Encourage development of Communities of Practise, i.e. a formal network of practitioners.

## Content

**The panel recommends that INIS&NKMS consider all the following aspects of content for inclusion into the portal. The panel would like to see the portal focus on the skill / expertise gap as the main priority.**

1. Responding to demand from industry to address the skill / expertise gap, the portal should include:
  - a. documents that will help people to learn
    - i. taped lectures of experts
    - ii. review articles
    - iii. commentaries
    - iv. state of the art reports
  - b. nuclear curriculum information, including a link to WNU and other web sources
  - c. recruitment information including links to web sites containing job info and content indicating developing areas

- d. a mechanism by which scarcity influences content development
2. It is recognised that INIS&NKMS will need to identify and integrate within the portal all the appropriate knowledge repositories within the Agency, including all relevant databases.
3. Readily accessible documents that can be quickly captured (i.e. quick fix).
4. Downloaded contents from external websites.
5. Ranking most important / key documents.
6. Information about archived and current computer codes should be maintained.
7. Developing yellow pages of experts (ie knowledge map).
8. Ongoing R&D.
9. Target design and operational expertise such as design rationale (the know why) as well as the know how.

## **Functionality**

**The panel recommends that INIS&NKMS considers all the following aspects of functionality for inclusion into the portal.**

- 1. Different levels of user access to include general access to the portal and content description levels with possible restricted access to documents and experts.**
2. Provide different views depending on user needs, e.g.
  - a. education & training desk
  - b. within nuclear safety portal
  - c. ask an expert facility
  - d. other themes
  - e. INIS
3. The taxonomy should be based on the INIS thesaurus as a starting point.
4. Provide sustainable archiving of the portal content (IT function).
5. Contributor based brokered searches should be supported by the portal.
6. The portal should include basic document management functionality.
7. Establish links to external content prior to archiving of captured content.
8. Gather statistics such as recording / analysing usage. This is needed to guide future portal development. To be fully effective need to identify area / function of each specific user, i.e. through the registration form.

## **Recommendations**

In summary, it is recommended that:

- A portal should be developed by the IAEA and that it should be managed by the INIS and Nuclear Knowledge Management Section (INIS&NKMS).
- INIS&NKMS staff should work with the staff of MTIT to design the infrastructure of the portal.
- INIS&NKMS should organise the content of such a portal and should seek to develop a taxonomy that would enable effective usage to be made of those contents by all users.
- An IAEA policy should be put in place to prevent the uncontrolled spread of portals in the

Agency.

- The portal should have a prominent position within the IAEA web site.
- The portal should primarily target the main audience (as identified in Appendix).
- Contributors should retain a degree of ownership of content within the overarching IAEA portal infrastructure.
- The portal should focus on the skill / expertise gap as the main priority.
- A mechanism should be developed to encourage collaboration and contribution.
- Different levels of user access are required to include general access to the portal and content description levels with possible restricted access to documents and experts.
- INIS&NKMS should consider aspects of content and functionality as outlined in the report.

## Appendix – Result of the brain storming session

### 1. Who is the target audience?

#### MAIN TARGET

Scientists  
Knowledge workers (Medical workers)  
R&D  
Regulatory bodies  
Government (Decision makers, Authorities)  
Universities (Teachers, Students, Pupils)

#### SECONDARY TARGET

Nuclear Industry  
Future generations

#### POTENTIAL USERS (in random order)

Anti nuclear organisations (Greenpeace, ...)  
Terrorists  
Journalists  
Public  
Vendors  
Politicians

Stakeholders (Customers, Compilers,  
Publishers, Contractors, Authors  
Information specialists  
IT people  
International organizations  
Information brokers  
Knowledge brokers  
Societies  
Lawyers  
Non-nuclear workers  
Lobbyists  
Language teachers  
Database vendors  
Libraries  
Managers  
Search engines  
Mass media  
Media production

### 2. Which type of contents should be covered?

#### 1. Basic Knowledge

*How to sort? Keywords might be technical level, applied or fundamental, media (electronic vs paper), plant life cycle (design, construction, commissioning, operation, decommissioning...)*

Conferences  
Scientific publications  
Databases  
References  
Patents  
Design  
Computer codes  
Manuals  
Materials  
Articles  
Documents  
Proceedings  
Reviews  
Logbooks  
Operational data  
Brochures

Educational materials  
Training packages  
Ongoing research programs (projects)  
Knowledge packages  
Progress reports  
Initiatives  
State of the art reports  
Plant histories  
Safety cases  
Non-conventional literature  
Factographical information

#### 2. General / Introductory / Summary

News  
Yellow pages  
Popular science  
Glossaries  
Dictionaries  
Announcements  
Links to web sites

Commentaries  
Interviews  
Statistics

### **3. Multimedia**

Films  
e-Multimedia  
Pictures  
Images

### **4. Regulation**

Legislation  
Guidelines  
Standards

Procedures  
Rules, guidelines  
Policies  
Strategies  
Legal

### **5. People**

Data about experts  
Nuclear organizations  
Current index to reviews  
List of experts  
Recruitment  
Forum  
Nuclear bibliography

## **3. What are the data sources?**

### **Tangible sources**

Company documents, (e-)journals, books, reports,  
Existing data in IAEA  
Databases - Place where laws are published  
Open archives  
Taxonomy, thesauri, glossaries  
Directory of Links  
Private communications  
Raw Interview output: video, text, audio

### **Organisations**

International (NEA, WNA, WANO, NEI, ISTC), EC  
Governments, National  
Academic/Research: Institutes, Universities, Associations, National labs  
Commercial-Industrial consortia: Publishers