

Technical Meeting
to
Develop Guidance Document for Nuclear Knowledge Management in
Government, Industry and Academia
9 – 13 October 2006, Vienna, Austria
L2-TM-28936
Meeting report

Background

The IAEA is developing guidance documents on NKM, including knowledge preservation and knowledge transfer in the nuclear sector. The following documents on Nuclear Knowledge Management have already been developed by the IAEA:

- *Managing Nuclear Knowledge: Strategies and Human Resource Development*, STI/PUB/1235, 2006, ISBN 92-0-110005-1
- *Working Material on Preservation of Knowledge: General Principles, Methodology and Application in Nuclear Industry* (IAEA-C.3-2005/2), issued in June 2005
- *Draft Glossary on Nuclear Knowledge Management*, issued in November 2005
- *Risk Management of Knowledge Loss in Nuclear Organizations*, STI/PUB/1248; ISBN 92-0-105406; July 2006.
- *Technical Document on Knowledge Management for Nuclear Industry Operating Organizations*, IAEA-TECDOC-1510, October 2006

Another IAEA guidance document is being developed to serve the needs of government, research, academic and non-generation organization managers in their endeavours outside the power generation sector. Certainly, the NKM publications listed above should be of use to nuclear professionals outside the power generation sector. The document on *Managing Knowledge for Nuclear Technology Development* will seek to accomplish the following in the context of non-power generating facilities:

- Identify the elements needed for an effective NKM system;
- Share relevant lessons-learned regarding NKM, including selected examples from organizations outside the nuclear field;
- Provide guidance concerning methods for NKM implementation.

This document will give information that can also be used to supplement the IAEA NKM publications listed above, thereby enhancing NKM practices in nuclear power organizations.

Technical Meeting

To facilitate the development of the new document described above, an IAEA Technical Meeting was held from 9 to 13 October 2006 at the Agency's headquarters in Vienna, Austria within the framework of Programme C.3. Nuclear Knowledge Management, and in a cooperation with Department of Nuclear Safety and Security. During the meeting, 16 experts from 13 Member States and IAEA staff reviewed nuclear knowledge management (NKM) lessons-to-be-learned from experience in nuclear enterprises other than power generating, identified basic trends in relevant subject areas, and catalogued potential NKM practices that could improve safety and performance in government, research, academic, and non-generation organizations.

Objectives

The following objectives have been set for the meeting:

- To provide a forum for presentations and discussions regarding practical NKM methods in current use or being developed within government, research, academic, and non-generation organizations
- To identify the basic trends in the subject area and knowledge management needs to be addressed in order to improve organizational performance
- To obtain overall comments on the structure and organization of the new document
- To draft an extended outline of the new document
- To develop useful tools, examples, and case studies to be included in the document

Outcomes

The Technical Meeting has generated the following work-products:

- Approved structure and organization of the document
- Agreed-upon examples of current practical methods being used or developed for NKM
- Action plan to develop the guidance document
- Meeting materials and presentations (on the communication web site)

Work Done

The participants drafted an extended outline of the new document on *Managing Knowledge for Nuclear Technology Development* to be developed during 2006-2007 within the framework of the IAEA Programme C.3. "Nuclear Knowledge Management". The document will provide guidance on NKM to the non-power generating sectors of the nuclear industry. This will be accomplished through the following objectives:

- **Awareness:** Increase the awareness of responsible individuals in these enterprises.
- **Strategy:** Identify the important elements needed for an effective NKM system.
- **Tactics:** Provide guidance concerning methods for NKM implementation.

- **Examples:** Share relevant lessons-learned regarding NKM – including selected examples from organizations outside the nuclear field.

A new document is intended for managers and professionals in non-power generating enterprises of the nuclear industry who are responsible for developing and maintaining nuclear knowledge and worker competencies within their respective organizations.

The contents of the guidance document have been developed as follows:

1. Introduction

- 1.1 Background
- 1.2 Scope and development of the report
- 1.3 Objectives
- 1.4 How to use the report

2. Driving Forces for Knowledge Management

- 2.1 Renewed interest in nuclear energy
- 2.2 Maintaining knowledge throughout the total nuclear life-cycle
- 2.3 Expansion of nuclear applications in industry
- 2.4 Aging nuclear worker force
- 2.5 Declining enrolments in science and technology
- 2.6 Continuous evolution of nuclear technology
- 2.7 Organizational imperatives to maintain institutional knowledge
- 2.8 Political environment

3. Elements of Effective Knowledge Management

- 3.1 Governance
- 3.2 Information management
- 3.3 Communication networks
- 3.4 Learning process
- 3.5 Organizational culture (motivational aspects)
- 3.6 Metrics – measuring, monitoring, and accountability

4. Knowledge Cycle - Turning Knowledge Management into Action

5. Methods and Tools for Knowledge Management

- 5.1 Strategic planning for knowledge management
- 5.2 Creating, developing and maintaining corporate memory (live repository)
- 5.3 Capture and transferring knowledge
- 5.4 Develop and maintenance of competences and expertise
- 5.5 Networking, collaboration and partnership (intra and inter)
- 5.6 Feed-back mechanisms, learning from successes and mistakes
- 5.7 Setting up an appropriate ICT-infrastructure

6. Specific Organizational Approaches

- 6.1 Government agencies and regulatory bodies
- 6.2 Research and development organizations
- 6.3 Academic institutions
- 6.4 Industrial enterprises (non-NPP)

7. Metrics: Measuring, Monitoring, Accountability

- 7.1 Leadership - Senior leadership in developing knowledge workers
- 7.2 Culture - Creating/maintaining/improving a knowledge-driven culture
- 7.3 Culture - Creating/maintaining/improving a learning organization
- 7.4 Culture - Creating/maintaining/improving an environment of knowledge sharing

- 7.5 Process - Transforming knowledge into value
- 7.6 Technology - Delivering knowledge-based products/solutions
- 7.7 Maximizing knowledge capital

8. Conclusions and Recommendations

9. Appendices

Conclusions and Recommendations

During the final session the below referred individuals were nominated as leaders in the process of the document development. They agreed to cover the following sections:

1. Introduction: Lead **Ed Boyles**, USA
2. Driving forces for knowledge management: Lead **Ron Hutchings**, Australia
3. Elements of effective knowledge management: Lead **Ana Elena Conjares**, Philippines
4. Knowledge Cycle - Turning Knowledge Management into Action: Lead **Marie-Laure Ruysen**, Belgium
5. Methods and tools for knowledge management: Lead **Antonio Barroso**, Brazil
6. Specific organizational approaches: Lead **Beverly Ecroyd**, Canada
7. Metrics – measuring, monitoring, and accountability: Lead **Charles Kittmer**, Canada

The participants agreed to draft the conclusions and recommendations of the document during the next technical meeting in October 2007.

The following milestones have been discussed and finally agreed upon:

1. Extended outline of the guidance document on Managing Knowledge for Nuclear Technology Development to be finalized by **the end of October 2006** (Ed Boyles and Andrey Kosilov).
2. All participants will provide their inputs to section leaders not later than **December 15, 2006**.
3. First draft document is to be developed in **the end of February 2007** and circulated to all participants for comments. (Section leaders and IAEA).
4. Examples are to be sent to the IAEA before **the end of March 2007**.
4. Comments from all participants are expected before **the end of April 2007**. (Comments are to be sent to section leaders and IAEA).
5. Second draft is expected to be issued in **June 2007**. (Section leaders and IAEA).
6. Second Technical Meeting to finalize the document – **October 2007**.