Nuclear Knowledge Management to support new nuclear power programmes

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Yanko YANEV, Zoltan PASZTORY
Nuclear Knowledge Management Unit
Nuclear Energy Department
Knowledge Management – IAEA definition

Knowledge Identification

Knowledge Capture & Preservation

Knowledge Transfer

Knowledge Refresh/Revise

From IAEA NKM Glossary

Knowledge management is an integrated, systematic approach to identifying, acquiring, transforming, developing, disseminating, using, sharing, and preserving knowledge relevant to achieving specified objectives.
Characteristics of Knowledge

- Knowledge is contextual, can be re-used
- Value of knowledge realized only if it is utilized
- The value of knowledge may change over time
- Knowledge has to be renewed, or maintained
- It can be difficult to transfer, capture, distribute
- Developed through learning processes
- Learning depends on memory, experience, expertise, transfer mechanism and opportunities
- Knowledge enables higher learning
- Facilitates effectiveness and “sense-making”
- Creation and utilization enhanced with (IT) technology.
What is the **Nuclear** Knowledge?

Specifics for **nuclear** knowledge are:

- its **long-term accumulation** and the long life cycle of facility operation
- remarkable investment from governments (public money)
- **security**, non-proliferation and safety concerns; international obligation
- needs large critical mass of basic nuclear science to support practical applications.
Who owns the Nuclear Knowledge?

- Governments, including regulators;
- Designers, vendors, utilities, operators, suppliers, consultants, and support organizations;
- Training and academic institutions;
- Research and Development (R&D) organizations;
- The Public and Non Governmental Organizations (NGOs); and
- International organizations.
KM in the Nuclear Life-Cycle

Design and Engineering
Operate & Maintain
Procurement, Manufacturing, Construction, Commissioning
Refurbishment, Decommissioning

KM in the Nuclear Life-Cycle

R&D, Conceptual Design, Design and Engineering, Procurement, Manufacturing, Construction, Commissioning, Operate & Maintain, Refurbishment, Decommissioning

Tools, Tools, Tools, Tools, Tools, Tools

Design Basis Information / CM
HR Responsibilities for new NPP Projects

Before NPP contract

1) National coordinator define the HR plan and coordinate implementation in all involved national organisations.
2) Focus on Regulatory Body selection and training.
3) IAEA plays a relevant role (guidance, assistance).

After NPP contract

1) Initial training provided by the NPP Vendor in the similar facility (Reference Plant).
2) NPP Owner develop and implement specific training program based on “know-how”, before commissioning.
3) Regulatory Body specialized training and relationship with RB of NPP Vendor country.
The IAEA role

- The role for the IAEA is to assist in the transfer of knowledge from “centres of competence” to the “centres of growth”.
Providing guidance for policy formulation and implementation of nuclear knowledge management

Strengthening the contribution of nuclear knowledge in solving development problems

Facilitating knowledge creation and utilization

Implementing effective knowledge management systems

Preserving and maintaining nuclear knowledge

Securing sustainable human resources for the nuclear sector

Enhancing nuclear education and training.
IAEA Support to Member States in the establishment of (National) NKM strategy

NE Series documents
IAEA Support to Member States in the establishment of (National) NKM strategy

Guidance documents and technical reports
Knowledge Management in NPP life-cycle

- Design
- Construction
- Operation
- Refurbishment
- Decommissioning

- relevant for Bulgarian Nuclear Sector
Construction Oversight Knowledge Management Tool for new build NPPs
Support from IAEA NE and TC Departments In NKM to Bulgarian Nuclear Sector

National projects in Bulgaria:

Activities planned/implemented

• Expert missions: 5/2
• Scientific Visits: 6/1
• National level Workshop: 3/1
• Project Meetings (KNPP/Vienna): 3/2
Examples of Knowledge sharing in the Region with participation of Bulgarian Experts

• IAEA CRP 2007-2008 “Comparative Analysis of Methods and Tools for Nuclear Knowledge Management”

• Regional projects for European Countries (RER0030) with participation of Bulgarian Experts

• National projects in Armenia, Ukraine. (exchange of experiences between MS)

• Regional activities under National TC projects (School of NKM in Sevastopol)
Examples of Knowledge sharing in the Region with participation of Bulgarian Experts

• BULATOM Meeting 2010:
  3 Generation of experts are here
  • 1\(^{st}\) – who developed/constructed the present nuclear sector
  • 2\(^{nd}\) – who operate/decommission the existing NPP units
  • 3\(^{rd}\) – who will construct and operate the next units at Belene, Kozloduy or both places.

• Future: establishment of Regional Training Center for safe operation and decommissioning of WWER technology.
Examples of Knowledge sharing in the Region with participation of Bulgarian Experts

Your challenge is:

to transfer knowledge between these expert-generations
to achieve safe construction - operation - refurbishment - decommissioning of nuclear facilities.

IAEA will support you!
For More Information please contact

http://www.iaea.org/inisnkm/nkm/index.html

Yanko YANEV Head of NKM Unit
Y.Yanev@iaea.org
+43 1 2600 22887

Zoltan PASZTORY
Group Leader NKM Unit
Z.Pasztory@iaea.org
+43 1 2600 26739
..thank you for your attention