

KM in the nuclear industry: some reflections on the recent IAEA conference.

At the [International Conference on Knowledge Management for Nuclear Facilities](#) (18th-21st of June) 145 key note and poster presentations demonstrated the depth of interest in knowledge management in the nuclear sector. There were over 240 participants from over 40 countries as well as 10 international nuclear agencies present at the conference.



Creative management of knowledge

In one of the opening addresses, Mr. Tomihoro Taniguchi, IAEA Deputy Director General, Head of the Department of Nuclear Safety and Security, argued that:

The traditional teacher student approach needs to be replaced by creative management of knowledge through international experience sharing and mutual learning. The real learning process can take place only when it is active enough to embed and embody the lessons learned for the continuous improvement of safety. Creative and continuous learning are the essential elements of knowledge management, particularly in the area of nuclear safety.

Nuclear KM

The IAEA has stated the following nuclear knowledge management objectives:

- **Safety** - Achieve safe operation and maintenance of all nuclear facilities by sharing of operational experience.
- **Economic** - Achieve gains in economics and operational performance through effective management of the resource knowledge.
- **Security** - Achieve responsible use by properly identifying and protecting nuclear knowledge from improper use.
- **Innovation** - Facilitate innovation to achieve significant improvements in the safe, economical operation of all new nuclear projects.
- **Sustainability** - Maximise the flow of nuclear knowledge from one generation to the next.

The conference focused on these objectives and was organised into four sessions:

1. Knowledge Management for Safety and Regulation
2. Knowledge Management for Improved Performance and Economics
3. Knowledge Management for Innovation
4. Human Resources, Education, Training and Public Information

Discussion

Renaissance

In general, the conference was conducted in an air of confidence about the future of the

sector. The increased concerns about the security of alternative energy supplies added to the, as yet, unproven worth of renewable energy sources and the improvements in safety records of the nuclear industry itself as creative confidence that the industry is experiencing a period of renaissance – a term used on several occasions during the conference. In the UK, in contrast, the emphasis is on decommissioning.

Ageing workforce

Given the long-term nature of nuclear energy in that from planning stages through operational and on to decommissioning stages a plant's lifetime knowledge takes on different emphases and can span over 150 years before a site can be deemed safe. It was no surprise, therefore, that many contributions to the conference focused on concerns about the [ageing workforce](#) in the industry and the need to transfer key knowledge across generations.

Growing support

In the early sessions of the conference, a number of regulators argued for the need of operators to manage knowledge effectively. Some agencies presented evidence of the creation of databases that provide access for operators to key policy and other related reports. Perhaps an over-emphasis on databases was present at this stage and very little evidence of how regulatory bodies were implementing knowledge management. That said, it was encouraging that the agencies present were supportive of knowledge management and that there appears to be an apparent growth in support over recent years.

Different methods

There was some concern that the reductions in science students may have a long-term effect on the industry. There were several presentations illustrating initiatives to create new talent pools as existing knowledge will become obsolete when there is no-one to transfer that knowledge to. The solutions to such potential problems were posed to include more integration between research institutions and the industry and for key agencies to promote the nuclear sector and its career potentials. I have some concern that several speakers promoted the idea of knowledge capture by advocating that “old-timers” write textbooks. Of course, books can be viewed as one way of codifying knowledge, but the clue is in the sentence – they are only one method and many others exist, especially given the rise of digital technologies. In addition, as one speaker put it, university teachers like to write books, nuclear professionals do not.

Km maturity

Sitting in the auditorium it was possible to gain an understanding how the nuclear industry appears to have grasped the importance of knowledge management for enhancing the performance, safety and innovation of the industry. A small number of speakers discussed the existence of networks or communities of practice, although many concentrated on databases and this may illustrate the level of KM maturity in the industry.

Add value

If there is a renaissance in the industry globally, then managing knowledge throughout

the nuclear lifecycle can certainly add value and contribute to safe operations and decommissioning. Supporting the implementation of KM from Day 1 and promoting and monitoring a knowledge culture in new sites is a role the regulatory bodies can play

Need for demonstration

In such complex operational environments where sites are more mature, the value of knowledge management needs to be communicated and demonstrated. This is especially the case with ageing workforces, limited new talent, existing organisational cultures sometimes resistant to change and an industry also learning how to decommission sites where knowledge management is only now on the agenda although buildings and reactors maybe up to 50 years old.

IAEA

Regulatory bodies can insist on KM but they must also find ways of sharing its success and perhaps even its difficulties. The IAEA has made some contributions to that process here although at this conference at least, there was an emphasis on the why and the what and less on the how. In the meantime, knowledge management in the nuclear industry will mature and its practitioners will learn about its complexities in their own very complex environments. There could be some rich stories to tell at any future IAEA KM conference.



More information

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