

Knowledge management and the elephant

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Knowledge management has come to mean many things to different groups of people, even within a single industry or sector. Its various aspects are wide-ranging and not easily brought together under a single roof. This article provides an initial glimpse into what is at stake and how the NEA is playing a role in the process.

Discussing knowledge management sometimes reminds me a little of the parable of the blind men and the elephant – or, if I may be politically correct, of the visually challenged people and the elephant. In this story, a number of sightless men approach an elephant and touch it in different places. “Ah,” says the first, who is touching the elephant’s massive leg, “An elephant looks like a tree.” “No,” objects the second, who is holding the ear, “The elephant is clearly like a giant fan.” “Come, come,” chides a third, who has grabbed the elephant by its trunk, “The elephant most resembles a snake.” Others, touching the side of the animal conclude it is like a wall, or feeling the tusk believe it resembles a spear, or grasping the tail likens it to a rope.¹

Likewise, in my discussions on knowledge management (KM), I come away with a sense that different nuclear communities have somewhat different perceptions of what it is, and therefore, of what the issues or problems are. For educators, KM is education, and the most important need is to develop the right academic courses to train the next generation of nuclear professionals. Corporate management sees KM in terms of its strategic market advantages, and considers the passing on of corporate knowledge a major need. In some parts of the industry, nuclear training is also an important concern. The research community sees the closure of research facilities and the cancellation of research projects midstream and worries about the loss of

the data collected from past experiments and the undocumented knowledge of the original researchers.

Of course, I draw a slightly extreme picture. Most of us understand the multiple dimensions to nuclear knowledge. However, different parts of the community do define KM somewhat differently, and different parts of the community do have a different sense of what actions are most critical, and therefore, on where resources should be spent.

Renewed interest in nuclear power

The time is ripe for the nuclear community to revisit how it has managed knowledge and to refine its activities for the future. Worldwide, there is a renewed interest in the nuclear power option. With the exploration of advanced reactor technologies comes the need to consider the use of research already done. (Changes to current operating facilities, through and including the decommissioning of such facilities, also draw on old data and design decisions.)

Several international programmes have been put in place to

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address the technological and other issues associated with a new generation of nuclear power plants. The Generation IV International Forum (GIF) is bringing together the research efforts of a number of countries to allow the sharing of facilities, financial resources and expertise to look into the next generation of reactors and research facilities. The IAEA International Project on Innovative Reactors and Fuel Cycles (INPRO) is also considering issues associated with new reactors.

Academic programmes in several countries are rebounding after a number of years of decline. Enrolments in nuclear programmes are increasing, and several new university programmes have been started. In addition, some very promising regional academic networks have been initiated: the Asian Network of Education in Nuclear Technology (ANENT), the European Nuclear Education Network (ENEN), the University Network of Excellence in Nuclear Engineering (UNENE) in Canada, and most recently, the World Nuclear University (WNU).

The NEA role

In this environment, the NEA is beginning to explore with its committees how it may be able to help member countries with KM activities. On the surface, it seems a bit strange for the NEA to be talking about KM as a “new” area of activity. After all, at its very core, what the NEA deals with is knowledge. Throughout its history, the NEA has played a significant role in all of the elements traditionally associated with nuclear knowledge – its generation, analysis, documentation, dissemination, preservation and transmission. Some highlights include the following:

In the area of education:

- The NEA continues its highly successful International School of Nuclear Law at the University of Montpellier in France.
- This year, upon request, the NEA held a specialised course on nuclear law and protection of the environment at the University of Cluj-Napoca in Romania.
- The NEA has been co-operating with the WNU effort since its inception and has committed to make its nuclear law courses available as part of future WNU activities.

In the area of data management and preservation:

- The NEA Data Bank has long operated as an international centre for code development and verification, and as a repository for data and analytical studies.
- The NEA works co-operatively with other data centres, such as the Oak Ridge National Laboratory Radiation Safety Information Computational Center (RSICC) in the United States.
- The NEA is also involved in efforts in selected areas, such as in the review and evaluation of data from past criticality safety benchmarking experiments.

In the area of new knowledge generation:

- The NEA serves as the Secretariat for the GIF technical working groups, which are developing research programmes for advanced reactor concepts.
- The NEA continues to play a co-ordinating role for international research projects such as the Halden Project.
- The NEA has conducted a study exploring opportunities for international co-

operation in innovative nuclear reactor development.

In the area of knowledge dissemination:

- The NEA continues its active role in adding to the literature authoritative studies and analyses ranging from highly technical areas to broad policy questions.
- The NEA continues to sponsor or cosponsor a variety of conferences, symposia, seminars and workshops, some aimed at a very broad community, and others focused on the needs in very specific technical areas.

Of course, the task of *managing* nuclear knowledge activities appropriately is always an evolving one. Renewed research on advanced technologies creates new pressures to address the disposition of old research archives. New operating facilities will undoubtedly generate increased demands for educated and trained personnel. Further, it appears that there may be lessons to be learned from the past. Clearly, the abandonment of research (due to precipitous funding changes) without fully documenting what had been done and why is one of the unfortunate mistakes of the past.

Beyond its own activities in KM, the NEA can assist member countries in their initiatives as well. One of the Agency's early efforts will be to get a better sense of the full range of KM activities taking place in various countries, and the Secretariat will be working with the NEA committees to accomplish this task. The NEA can also usefully help countries share best practices in KM and, upon request can serve as a repository for data, codes and analyses.

The one caution that is on the mind of everyone who is interested in KM is that the

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- Education
- Data management and preservation
- New knowledge generation
- Knowledge dissemination



resources for this activity are limited. For example, new facilities are needed, but they are expensive, and we can no longer expect to duplicate expensive research facilities on every campus and in every country. Better sharing of such scarce resources is needed, both within the larger countries and across national borders. The strong interest in international collaboration on research projects is therefore very promising. However, there are still many hurdles ahead when it comes to siting new facilities, as the ITER experience in the fusion area suggests.

Further, there may be useful data available from old experiments, but the analysis of this data will draw from the same pool of funding that is available for new research. Intelligent decisions need to be made to determine which portions of the old data merit being

retrieved and analysed. This requires tough choices based on a combination of factors, such as technologies of current interest, availability of research facilities and capabilities for new work, and the state of preservation of old data. A lesson learnt for the future is to try to craft funding and research performance so that research programmes complete and document the analysis of data already collected, even when research priorities change. A number of NEA committees have addressed portions of the data preservation issue by developing guidelines in specific areas. The Agency will be looking to share those guidelines for expanded use.

Given that KM is threaded through everything the NEA does, it is unlikely that there will be a specific new initiative for KM. Rather, it is likely to become a horizontal activity,

with initiatives and practices already under way shared across committees and activities. While that may look very much on the surface like “business as usual”, we believe that a cross-cutting initiative can help focus and strengthen existing activities with very little new effort needed. The outcome of this approach will be improved consistency across NEA activities, and hopefully, across the activities of NEA member countries as well. ■

Note

1. There are several versions of this story. These examples are drawn from a poem, “The Blind Men and the Elephant”, by American poet John Godfrey Saxe (1816-1887). The idea behind the poem derives from India, and several sources have been cited for its origin.