IAEA reorganizes nuclear information services

BY EMIL LEVINE

Internet search tools have made it much easier to obtain information from the International Atomic Energy Agency.

AS PART OF an overall restructuring of the International Atomic Energy Agency's Department of Nuclear Energy, the agency has established the Nuclear Information Section (NIS). The restructuring, recently announced by IAEA Director General Yukiya Amano, also includes the creation of a separate Nuclear Knowledge Management (NKM) Section, as demand for assistance in this area is growing among member countries.

According to the NIS Web site, "This restructuring and the creation of the NIS provides an opportunity for further enhancing existing information products and services and introducing new ones—all with an eye towards advancing higher organizational efficiency and effectiveness."

The NIS comprises the International Nuclear Information System (INIS), headed by Taghrid Atieh; the IAEA Library, headed by Daw Ah Win; and the Systems Development and Support Group (formerly part of INIS), with Domenico Pistillo as the acting group leader. Under the previous structure, INIS and the IAEA Library were separate sections.

Dobrica Savic, the head of the NIS, provided his view of the potential of the reorganization in the March 2012 issue of the IAEA newsletter *Nuclear Information and Knowledge,* in which he wrote: "Nothing endures but change! This wise saying came from the Greek philosopher Heraclitus over 2500 years ago. As pertinent now as it was then, it tells us that through time all things undergo change, and that with every change there is an opportunity for something new to happen.

"Aristotle contemplated that for a change to occur, something new needs to come into

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being, something old needs to pass away, while something stays the same throughout. In 2011, the old INIS Online Database was replaced by the new INIS Collection Search, but our commitment to offer free online access to millions of INIS records remains the same. In 2012, a new Nuclear Information Section (NIS) was born, bringing together INIS and the IAEA Library. The old INIS and NKM Section passed away, but the commitment to offer high-quality information and services to our users remains the same."

The INIS unit

INIS was established by the IAEA in 1969 in collaboration with interested member states and other international organizations. Its objective is to provide access to information on scientific literature published worldwide on the peaceful uses of nuclear energy. INIS now includes 151 members (127 countries and 24 international organizations) and in 2011 had 21 staff members and an annual budget of about €3.3 million (about $4.08 million).

In 2011, 109 914 bibliographic records were added to the INIS Collection, bringing the total to 3 367 451. The collection also includes a unique set of "nonconventional literature" (NCL) consisting of full-text documents—such as scientific and technical reports, conference proceedings, patents, and theses—that are not available through commercial channels. Last year, an additional 13 586 NCLs were prepared, bringing the total available in the collection to 439 314, of which 309 271 are available to the public. (The remainder of the items are on microfiche and are in the process of being digitized.)

About 70 percent of all bibliographic records entered into the INIS Collection in 2011 were journal articles, followed by reports, which made up slightly more than 8 percent, and books, which constituted 7 percent of the collection.
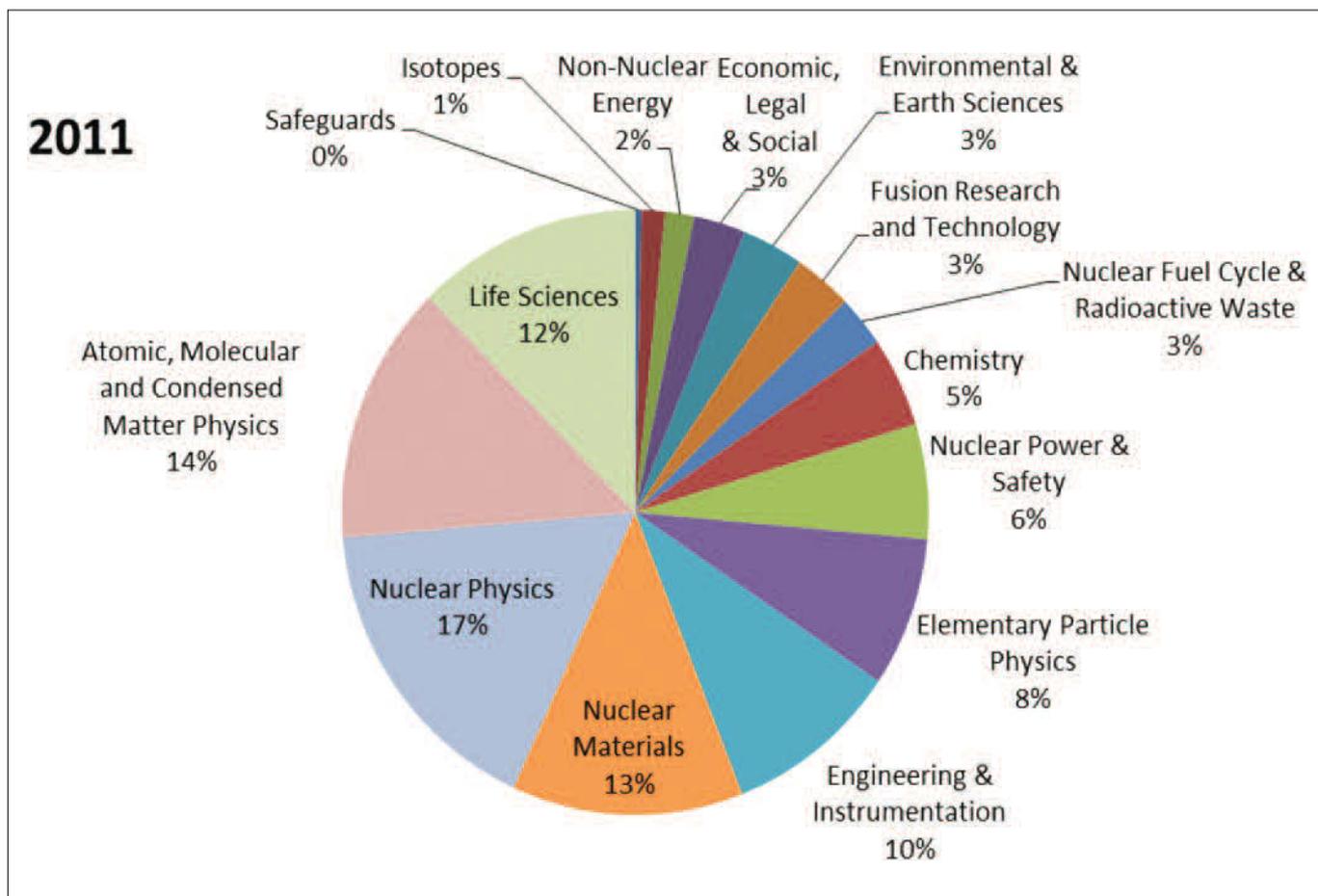
The Google INIS Collection Search

In September 2011, the INIS Online Database was replaced by a Google-based INIS Collection Search Web application, which represents one of the major improvements to the services provided to users since the establishment of INIS.

The retired INIS Online Database system, which was based on a 50-year-old Committee on Scientific and Technical Information model, was accessible only by subscription and its use was restricted. This limitation was removed in April 2009, when the INIS database was opened to Internet users worldwide without cost (*NN,* Feb. 2009, p. 56). As a result of this change, the number of monthly searches in 2009 increased tenfold, from 7000 in April to over 70 000 in December. In 2011, over 50 000 searches and 3500 downloads were performed monthly.

All INIS bibliographic records and digitized NCL documents are now fully indexed and searchable. The INIS Collection Search increases download and search speed and supports multilingual queries. It also provides for Boolean searching (using *or, and,* and *not*) of metadata fields such as Abstract, Author, Country, Descriptors, Language, and Title.

A particularly important new feature is the relevance ranking of output, a vital feature for a large database. Output sorting by date is also an option.

The INIS Collection Search allows user profiling and saving of queries, exporting

2011

- Safeguards 0%
- Isotopes 1%
- Non-Nuclear Energy 2%
- Economic, Legal & Social 3%
- Environmental & Earth Sciences 3%
- Fusion Research and Technology 3%
- Nuclear Fuel Cycle & Radioactive Waste 3%
- Chemistry 5%
- Nuclear Power & Safety 6%
- Elementary Particle Physics 8%
- Engineering & Instrumentation 10%
- Nuclear Materials 13%
- Nuclear Physics 17%
- Atomic, Molecular and Condensed Matter Physics 14%
- Life Sciences 12%

Input to the INIS Collection by subject in 2011

search results in a variety of formats (HTML, Excel, or XML), downloading citations, multilingual user interface, and cross-language searches. Besides English, the multilingual interfaces include Arabic, Chinese, French, German, Japanese, Russian, and Spanish.

A robust security architecture protects against denial-of-service attacks, and the integration of Google Analytics provides the capability for analyzing usage.

Searching is also significantly enhanced by the integration of the INIS/Energy Technology Data Exchange joint thesaurus. Users can select from over 30 000 validated nuclear terms (and their synonyms) to assist in queries. This multilingual thesaurus is used for indexing and retrieval. Users can choose INIS descriptors from seven different languages—Arabic, Chinese, English, French, German, Russian, and Spanish. When a descriptor is selected, associated terms, such as related, narrow, and broader, are displayed.

The INIS NCL Collection

As noted above, 13 586 nonconventional literature full-text documents were processed and added to the INIS NCL collection in 2011. The continuing digitization of the microfiche collection, a process that began 10 years ago, is a significant contribution to the nuclear science litera-

ture. Full texts numbering 22 966 and consisting of 451 605 pages were digitized from microfiche and added to the collection in 2011, bringing the total of electronic full texts digitized from microfiche to 253 830 since the project began in 2003 (12.6 million pages and 289 GB of data). At this time, 73 percent of the microfiche collection has been digitized; an additional 3.4 million pages will be processed before project completion, which is expected within the next two to three years, depending on available resources. The ultimate goal is the complete integration of the current collection of microfiche-based NCL documents into the INIS Collection and online searchability of the full texts in several languages.

To appreciate what has been achieved, until the late 1990s, it usually took two to four weeks to fulfill requests for copies of NCL microfiche documents. Today these same documents, now digitized, are delivered (downloaded) in just minutes.

In 2011, INIS also introduced the distribution of NCL documents on DVD, replacing the use of CD-ROMs. There are 81 subscriptions (75 free and 6 paid) to this service.

INIS continues the cooperative arrangement with the OECD Nuclear Energy Agency (NEA) Data Bank, whose primary role is to provide scientists in its member

countries with reliable nuclear data and computer programs for use in nuclear applications. Several IAEA member states that are not members of OECD benefited from this cooperation: In 2011, 180 computer program packages from the OECD/NEA Data Bank were provided to 21 IAEA members.

Systems Development and Support Group

Formerly part of INIS, the Systems Development and Support Group is responsible for the daily maintenance of all automated systems related to the input, production, and retrieval of the INIS Collection, as well as for replacing and upgrading legacy systems.

It has been noted that INIS is more productive owing to extensive automation and the replacement of legacy systems over the past few years. For example, the introduction of computer-assisted indexing doubled the productivity of INIS subject specialists in their validation of input to the database.

The IAEA Library unit

The IAEA Library continues to complement its print collection with an increasing number of electronic resources, tailoring services to meet clients' needs. Access to the IAEA Library is available to staff members of government organizations, nuclear

research institutes and laboratories, nuclear information centers and libraries in IAEA member states, and approved private individuals. The library provides access to more than 50 databases, and librarians are available to assist users in searching for information. Contractually, the data received from these services can be used only by IAEA Library users and for official purposes.

The number of visitors to the library and of requests fulfilled continues to increase. In 2011, the number of visitors exceeded 1200 per month, over 15 000 research requests were processed, and the number of loans to users increased to more than 20 000. Also, 511 personalized user profiles were created and 41 379 packages of information were delivered. Innovative approaches for the library's Communication and Outreach programs were also adopted to include tailor-made training and workshops.

While digital collections help increase interest in library resources, the growth in the number of visitors and book loan statistics reaffirmed the demand for strong print collections, a trend noticed in most academic and scientific libraries.

Expansion of Library activities

New technology has provided opportunities for the IAEA Library to move beyond the role of an independent repository. In response to the rising demand for digital content distribution and access, the IAEA Library implemented a project jointly with INIS to preserve and provide online access to full-text, out-of-print IAEA publications. As a result, 303 volumes were digitized and are now available through the online library catalog.

The digitization of the library's audiovisual materials has culminated in a collection of more than 700 items that are now available for online streaming through the IAEA Library catalog. Through this project, the audiovisual collection was revamped, and new and innovative uses of films are now available.

In 2011, a pilot project began in which preloaded eReaders (Kindles and iPads) were offered for loan. Once officially introduced, this will allow the library to expand the use of its collection of electronic material, currently 37.5 percent of the whole collection.

International Nuclear Library Network

A particularly significant activity of the IAEA Library is the exchange of nuclear information among members of the International Nuclear Library Network (INLN), which is coordinated by the IAEA Library under the leadership of Thanos Giannakopoulos. Resource sharing is now a well-established practice among 37 nuclear libraries in 28 countries.

Throughout 2011, members of INLN continued to contribute to nuclear information and knowledge management on a global scale. Requests for information among members more than doubled in 2011, an increase of 124.7 percent compared with 2010, largely due to the need for more information support during and after the Fukushima Daiichi accident.

Document delivery remains the major attraction of the INLN, representing the largest share of requests. Also, a newly introduced service that provides guidance on nuclear information and knowledge management via e-mail, telephone, or Skype now represents 7 percent of service requests, marking a developing trend.

Membership in INLN is open to IAEA member states and United Nations organizations. Interested research institutes and other international, intergovernmental, and nongovernmental organizations may also join with the agreement of the INLN members.

Nuclear Knowledge Management Section

As a result of the restructuring of the IAEA's Department of Nuclear Energy, the former Nuclear Knowledge Management unit became a new section. Zoltan Pasztory is the acting head of the section.

The section focuses on developing methodologies and tools to support nuclear knowledge management in nuclear organizations and to provide industry guidance and assistance. The section will continue to facilitate capability development in nuclear education, training, and information exchange and to assist member states in establishing, maintaining, and preserving nuclear knowledge bases.

Together with the Nuclear Safety Department and the Nuclear Power Engineering Section, the Nuclear Knowledge Management Section supports capacity building of countries embarking on nuclear power programs, as part of the IAEA Action Plan on Nuclear Safety that was drawn up in response to the Fukushima accident. The various programs, services, and products of the section are focused on four key areas:
1. Direct assistance in the implementation of nuclear knowledge management in member state organizations.
2. Development of nuclear industry guidelines and methods in knowledge management.
3. Effective technology and tools to support the generation, capture, preservation, and sharing of nuclear knowledge.
4. Innovative methods and networks for nuclear knowledge transfer, education, and training.

The Nuclear Knowledge Management Section will continue its collaboration with the INIS unit, as the two groups' programs are synergistic and complementary. **NN**