



# INIS: Nuclear information for development

*A look at main trends influencing the system's future*

by Alexander V. Filippov

Since its foundation, the IAEA — through various technical and scientific programmes — has served as a focal point for information exchange among its Member States interested in atomic energy's peaceful development in many fields. Almost every programme produces information in some form, ranging from technical reports to meeting papers. Overall, the Agency has developed into one of the most comprehensive sources of information in the nuclear field.

Recent incidents at nuclear facilities in different countries, such as Three Mile Island in the USA and Chernobyl in the USSR, have made it clear that Member States express much interest in the IAEA as a single, though not sole, source of nuclear information.

## A million references

The idea for an international nuclear information system, or in short, INIS, was born in 1965. In that year, the IAEA — in recognition of its statutory obligation to foster the exchange of nuclear information among Member States — invited a number of consultants from the USSR and the USA to outline a possible system.\* The IAEA Board of Governors approved setting up INIS on an experimental basis in February 1969, and the first output products of the new system were issued in April 1970.

INIS was designed as a co-operative, computer-based, decentralized, bibliographic information system. It was supposed to serve the information requirements of countries with different levels of development, backgrounds, and traditions in the methods and techniques of information handling.

Starting in April 1970, the bibliographic reference journal *INIS Atomindex* was published, but with relatively few items. These were collected from its first 50 participants. It has since grown to include 88 Member States and 86 529 records (as of 1985). Sixteen years

after its first issue, *INIS Atomindex* published its millionth reference in Volume 17, issued in April 1986. Today, it is the only international abstracting journal with worldwide coverage of literature in nuclear science and technology.\*

\* In the United States, the Atomic Energy Commission (since replaced by other organizations) used to publish *Nuclear Science Abstracts*. The publication was discontinued in 1976, after the successful introduction of *INIS Atomindex*.

### INIS and AGRIS: Sister systems in the UN family

In a positive way, INIS has influenced nuclear development in all participating countries. For industrialized countries, it has facilitated the exchange of scientific and technical information, which is today an inseparable part of investment in research and development. Developing countries — singly, or as groups considering regional projects — have acquired access to the worldwide set of knowledge required for the transfer of science and technology and for the diffusion of knowledge. Industrialized countries also have received information about the levels and types of activity in the developing world, complementing the databases with corresponding relevant literature.

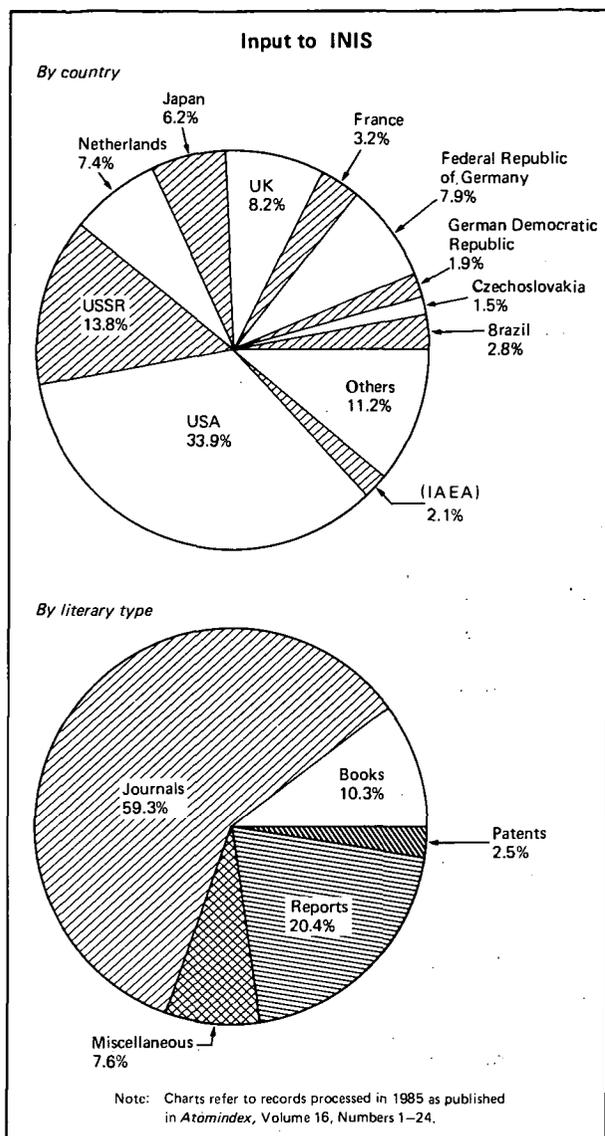
INIS also has influenced information technology, serving as a model for similar systems in other fields. A case in point is AGRIS, a sister system covering the field of agriculture and operated by the Food and Agriculture Organization (FAO) of the United Nations. The FAO has established a small staff unit at IAEA headquarters in Vienna to perform AGRIS work, which draws upon the Agency's extensive equipment and facilities. Over the past 10 years, the close proximity and collaboration between INIS and AGRIS operations has had many benefits for both systems.

As INIS does in the areas of nuclear science and technology, AGRIS collects bibliographic information from all over the world on scientific, technical, and socio-economic publications issued on a wide variety of food and agricultural matters. More specifically, INIS covers subject fields that include physics; chemistry; earth sciences; radioisotope effects and kinetics; applied life sciences; health, radiation protection, and environment; engineering; fission reactors; isotope and radiation applications; waste management; nuclear law; and safeguards and inspection. Main AGRIS subject areas include geography and history; agriculture; economics, development, and rural sociology; plant protection; post-harvest technology; forestry; fisheries; human nutrition; pollution; and natural resources and the environment.

Further information on AGRIS may be obtained from the AGRIS Co-ordinating Centre, FAO, Via delle Terme di Caracalla, 01100 Rome, Italy. Information for this report is drawn in part from a paper by I. Marchesi, Director of the IAEA Division of Scientific and Technical Information.

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\* Article VIII of the IAEA Statute mandates the Agency to "take positive steps to encourage the exchange among its members of information relating to the nature and peaceful uses of atomic energy" and to "serve as an intermediary among its members for this purpose".



70% of the world's scientific and technical articles and about 30% of all scientific books are processed and composed electronically.

The INIS database today covers about 90% of the world's published nuclear literature, according to a study undertaken by the International Centre for Scientific and Technical Information (ICSTI), a member of INIS. (The study compared INIS with several other databases — known as INSPEC, COMPENDEX, and MEDLINE. Comparison with others, specifically VINITI and METADEX, is in progress.)

The INIS database also contains documents not commercially available (so called non-conventional documents), such as research reports, conference proceedings, and others. These number about 215 000 and are a valuable source of nuclear information. (See the accompanying diagrams.)

As a fully documented system, INIS has its own approved statute ("Definition of Membership Arrangements for INIS") and a *Reference Series* covering, for example, the rules, instructions, guides, manuals, formats, and codes on which the system is based.

### Information trends influencing INIS

It goes without saying that the explosive growth in information technology — ranging from mainframe to microcomputers, data networks, and high-capacity, inexpensive mass media, such as optical disks — will influence a computer-based system such as INIS. These new developments, however, all will be studied from the point of view of the needs of users in INIS Member States, whether in developing or developed parts of the world. Needs are subject to the level of economic and technological development in a particular country.

Three main types of influences are most likely to determine the progress and development of the INIS programme in the long run. Two are represented by the needs of INIS liaison officers from developed and developing countries. The third is represented by the interest of IAEA Member States in receiving comprehensive information from the Agency as a single information source.

Although information needs of participating Members are different, they have been classified by analysing recommendations made at meetings of liaison officers and the advisory committee, and through correspondence with liaison officers. This shows that the developed Member States place emphasis on having a more precise and narrower INIS subject scope, better coverage of literature in particular subject fields, and improved comprehensiveness of the database. They emphasize expanding coverage of the research subject area by including, for example, publications on research in progress and collections of factual data. Since they have advanced information services and access to other information sources, industrialized Member States are not too much in favour of developing new INIS output products and services, nor the expansion of the INIS

From 1984-86, a general review of INIS was done, one which produced interesting and valuable information. One important finding, gratifying to all INIS participants, was that the system's fundamental attributes and design are still valid after 16 years. As the system grows, so do the benefits that developing and developed countries alike can draw from the INIS system.

### The scope of INIS

One mark of the system has been co-operative expansion. The IAEA compiles the common database and manages and co-ordinates the system for its Member States. Guidance comes from an advisory committee and INIS liaison officers throughout the world.

Currently, 63 centres worldwide regularly submit information to INIS. Almost all the information — about 96% — is received in a form that can be read by computers (machine-readable). This is important in helping to provide opportunities to introduce modern technology into the system. So, too, is the fact that approximately

subject scope *per se*. Most developing countries, on the other hand, are highly interested in having various new types of output products, such as floppy disks, alongside the printed issue of *INIS Atomindex* and its various cumulative indexes.

It is a challenging task for the INIS Section to develop an optimal pattern of output products and services covering the information needs of all members. One step in this direction would be the introduction of a medium (technically called Compact Disk Read Only Memory, or CD ROM) for INIS output products that could, together with a certain configuration of micro-computers, provide the opportunity to create nuclear information service centres in developing countries.

The INIS staff at IAEA is now studying this possibility. Results of a feasibility study will be presented to the 15th INIS Liaison Officers' meeting in May 1987 in Vienna.

### Future directions and challenges

With respect to all of its databases in various programmes, including INIS, the IAEA now is at a point where it needs to consider future information systems development. Databases that have been developed are now sufficiently rich to be of interest to a broad-based community of users. As the systems begin to be more widely used, they will require more management so that they can be more efficiently used and integrated.

In addition, the success of current systems is giving impetus to requests from other programmes for even more systems and databases. These also will have to be integrated. As the systems are now, a user of any database must be rather well trained in that particular retrieval system, as well as in the particular characteristics of that data. As these factors vary from one database to another, one must be very much of an expert to make use of multiple databases.

When planning the creation of an integrated IAEA information system that co-ordinates and combines vari-

### Products and services

Information collected by INIS is distributed in several forms: *INIS Atomindex*, an announcement and abstract journal; a cumulative index; microfiche (for non-conventional literature not normally distributed through book, magazine, or publishing houses); on-line (remote access via telephone, telecommunications, or telex networks); and magnetic tapes.

One area of increasing interest is in on-line, or remote, access to INIS. This service is available to all 74 Member States and 14 international organizations participating in the system's network; use must be authorized by the national INIS liaison officer, and the service does entail costs.\*

Thirty-seven INIS Member States made remote access to the Agency's computer during 1984 and 1985. The variety of users is such that organizations from all continents have registered and used the system. Some of those were only on an apparent trial basis (a few hours a year), while some others have started using the service on a more permanent basis (reaching tens or hundreds of hours access time per year per country). Among the "champion countries" in this regard are Bulgaria, Czechoslovakia, France, German Democratic Republic, Italy, Netherlands, and the United Kingdom.

In practice, several less developed countries also have made use of remote access via telex systems. Normal telex machines can be used since technical arrangements have been made to translate messages into computer codes, and vice versa.

As part of regular INIS training, courses also are being conducted in the use of on-line facilities to access the system.

\* On-line service also is available for AGRIS, the database covering food and agriculture and stored in the Agency's computer.

*Information contributed in part by V. Dragulev of the Division of Scientific and Technical Information. Further information about INIS products, services, costs, and technical features may be obtained from the INIS Section in that division.*

ous information sources, including INIS, it is difficult to predict what form would best fulfill the needs of the Agency and its Member States. It seems obvious, however, that the INIS system and its operational experience over the past 16 years should be given much consideration. In turn, the topicality of INIS also would be strengthened through interaction with the Agency's other information systems.



One display at the First National Meeting on INIS services, hosted by ININ in Mexico. See the article beginning on the next page for a report on INIS in Mexico.