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Nuclear Information and Knowledge

News from the Nuclear Information Section
International Nuclear Information System (INIS) & IAEA Library
No. 14, June 2013

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To our Readers

A sceptic once said, “If you are not in Google, you don't exist”! Some even believe that our relevance depends on being found on the first page of Google search results. Preferably the first line! Is this realistic or just an illusionary target?

A Google search for ‘nuclear information’ places INIS on the first page of the results. In fact, it is ranked second of all search hits! This great result was achieved through hard work collecting world nuclear documentation for more than 40 years. INIS achieved this admirable place through a tremendous amount of joint effort and work, but in order to remain there, constant improvements and changes are necessary. This issue of the Nuclear Information and Knowledge Newsletter talks about some of those changes and the work done by the Nuclear Information Section during the last months.

A great number of records were added to the INIS Collection. This and other achievements are described in the article on INIS. The main INIS input tool, FIBRE+, has undergone modifications, adding new features. The article on the history of digital preservation at INIS

INIS Collection and Activities

With the completion of the 2012 production, a total of 130 999 records were added this year. This brings the number of records in the INIS Collection to 3 494 544. This figure made 2012 the second highest year for total annual input in 43 years of INIS. Read more

IAEA Library Collection and Activities

The cost of science and technology journals has increased and new technologies have been introduced to the information world. The availability of open access information resources and new technologies offers many opportunities to expand the accessibility of scientific information worldwide. The IAEA Library’s response to these issues has been to balance the expenditures between different formats of information resources and to expand partnerships to sustain the level of access to these resources, as well as to develop new solutions in order to meet new needs. Read more

The International Nuclear Library Network (INLN)

The International Nuclear Library Network (INLN) is a global nuclear information and knowledge management initiative aimed at strengthening international cooperation. Libraries, information centers and research institutes from Argentina, Australia, Austria, Belarus, Brazil, Canada, China, Czech Republic, Egypt, France, Ghana, India, Indonesia, Ireland, Japan, Mexico, Morocco, New Zealand, Nigeria, Norway, Pakistan, the Republic of Korea, the Russian Federation, Serbia, Tunisia, Turkey, and Uzbekistan already reap the benefits which the INLN offers. Read more

The History of Digital Preservation at INIS

Since its creation in 1970, the International Nuclear Information System (INIS) collects and disseminates non-conventional literature (NCL) received from Member States and international organizations. Initially, INIS received paper based NCL documents which were microfilmed in-house and stored in the INIS archives. In 1997, the INIS Secretariat replaced the microfiche-based production system with an imaging system to process, preserve and disseminate all NCL documents in electronic format. This marked the beginning of digital preservation efforts that continue today. Read more

ICS Developments

describes the ways and means for digitizing and making available hundreds of thousands of full texts. Some of the most exciting changes are happening with the INIS Collection Search (ICS). Its improved usability, enhanced search results, emailing and quick browsing are some of the features described here.

Articles on the IAEA Library and INLN talk about their continuous growth. The IAEA Library continues to improve its efficiency and offer better user experiences. The number of e-journals offered by the Library has grown by more than 50% in the last year. Membership in the INLN, as well as the number of its information requests has grown significantly. An article about the Next Generation Library Management Systems complements this area of activities within the Nuclear Information Section.

Inspirational reading!

Dobrica Savic

Forward to a colleague

Know someone who might be interested in the NIS Newsletter? Why not forward it to them?

Unsubscribe

If you don't want to receive the Newsletter any more, please unsubscribe.

The INIS Collection Search (ICS) is the gateway to both the INIS Collection and the IAEA Library bibliographic records. The INIS Secretariat continued investing in the development of new ICS features. Since September 2012, two additional versions of the ICS have been released, increasing the amount of information accessible through this web application and improving its usability and efficiency. Read more

From FIBRE to FIBRE+

In March 2013, FIBRE+ 1.0 replaced WinFIBRE 3.0.9, maintaining the same functionalities for INIS input preparation, yet adding powerful new features made available to input centres on the IAEA FTP server. Read more

The Next Generation Library Management Systems

The Library Management System (LMS), the tool that connects a library client and a librarian to library resources, initially designed for the management of print collections, increasingly fails to cater to the diverse material collected by libraries. To amend this, the IAEA Library has decided to undergo the process of changing the currently used LMS, a procedure similar to heart-transplant surgery. Read more

Meetings

- The Nuclear Information Technology Forum, Shanghai, China
- INIS Training Seminar, IAEA Vienna
- Fifteenth International Conference on Grey Literature, Bratislava, Slovak Republic

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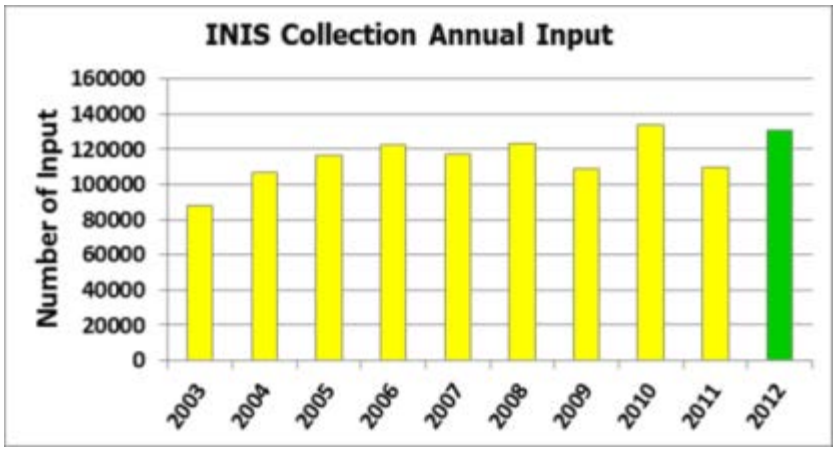
INIS Collection and Activities

The International Nuclear Information System (INIS) was established in 1969 by the International Atomic Energy Agency (IAEA) in collaboration with interested Member States and international organizations. The main objective of INIS is to provide access to information on scientific literature on the peaceful uses of nuclear energy published worldwide. INIS operates under special membership arrangements that set specific duties and privileges. Currently 128 Member States and 24 international organizations are members of INIS.

INIS Collection Input

With the completion of the 2012 production, a total of 130 999 records were added this year. This brings the number of records in the INIS Collection to 3 494 544. This figure made 2012 the second highest year for total annual input in 43 years of INIS. The number of records input into the INIS Collection has steadily increased over the past years, more than double the number of annual entries since 2000. An additional 34 580 full texts (24 742 from microfiche and 9838 from Volume 43) were prepared and uploaded, bringing the total of full text documents available in the collection to 469 271, of which 314 729 are publicly accessible. Several INIS members sent INIS input for the first time, some after many years of no input.

This remarkable achievement is a direct result of each participating INIS Member's contribution throughout the past 43 years.



Over 90 000 IAEA Library bibliographic records were added to the INIS Collection in 2012. This enables a simplified and more efficient single access point to both the INIS and IAEA Library collections.

During the first five months of 2013, a total of 57 274 INIS records were added to the INIS Collection, for a total of 3 551 693 records which are publicly available to the public. During the same period, an additional 6150 full text documents were prepared and uploaded, bringing the total of full text documents available in the Collection to 475 421, of which 317 067 are publicly

accessible. This collection of documents on the peaceful uses of nuclear science and technology is now fully indexed and searchable online using Google-based technology. Over 50 000 searches and 4000 downloads were performed monthly.

The 36th Consultative Meeting of the INIS Liaison Officers, Vienna, Austria 4–5 October, 2012

The 36th Consultative Meeting of the INIS Liaison Officers (ILOM), held in Vienna from 4–5 October, 2012, was attended by representatives from 47 Member States and 5 international organizations. The opening address was given by Mr. Bychkov, Deputy Director General of the Department of Nuclear Energy. The meeting reviewed INIS activities since the 35th ILOM, held in 2010, the use and effectiveness of INIS, and its future. Presentations were delivered by INIS Liaison Officers and speakers from Azerbaijan, Brazil, China, India, Japan, Pakistan, the Russian Federation, Syria, and the USA, providing valuable information on many aspects of their INIS operations and suggesting further developments. The important role of national INIS centres in preserving literature on major nuclear accidents was stressed, as was the need to provide access to other types and formats of nuclear information. The agreed recommendations and the presentations are available at the ILOM website.

The positive feedback received during and after the meeting confirms that this event was very informative and useful to the participants.

Cooperation between INIS Members and the INIS Secretariat

- With the completion of the Japanese version of the Joint INIS/ETDE Thesaurus, the multilingual Thesaurus is now available in eight languages; Arabic, Chinese, English, French, German, Japanese, Russian and Spanish.
- In close cooperation with the national INIS centre of the USA, the INIS Secretariat completed coverage of the main missing US NCL documents related to TMI, which are now available to users worldwide through the INIS Collection on the web.
- The ILO of the Czech Republic prepared a 'Basic Guide to the On-line INIS Collection Search' which was published in *Bezpecnost Jaderne Energie* 21(59), 2013, No. 1-2, p. 9-16, in Czech, and which he also translated into English. The Guide is available at: www.iaea.org/inis/in-the-world/index.html

The INIS Secretariat encourages all national INIS centres to share their various promotional and other activities with the INIS community by sending them to the INIS Secretariat.

Capacity Building

Provision of assistance to the national INIS centres continued in order to facilitate their active participation in INIS. The national INIS centre of Georgia was provided with a set of equipment to facilitate their INIS related activities. This assistance included an expert assist visit which provided on the job training on all aspects of INIS operations. The INIS centre of Egypt hosted training for two fellows from the INIS centre of Yemen. The national INIS centre of Belarus hosted one fellow from Croatia, providing training on all aspects of input preparation and

products utilization.

Promotion and Outreach

The INIS Secretariat gave a presentation on INIS and its main products and services, highlighting the main benefits to INIS Member States, at the Technical Meeting on Topical Issues of Infrastructure Development: Nuclear Power Project Development in Emerging Nuclear Power States, held in Vienna, Austria, 11–14 February, 2013. The briefing was well received by approximately 100 participants.

INIS Liaison Officers were provided with assistance to promote INIS within their national boundaries, and promotional materials were sent in support of such activities. The INIS Secretariat provided the ILOs with information on relevant meetings and conferences taking place in their countries encouraging possible contacts and promotion, as well as the inclusion of relevant literature input into the INIS Collection.

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IAEA Library Collection and Activities

Information Resource Collections

The information industry is rapidly developing and the market for information products is changing. The cost of science and technology journals has increased and new technologies have been introduced to the information world. The availability of open access information resources and new technologies offers many opportunities to expand the accessibility of scientific information worldwide. The IAEA Library's response to these issues has been to balance the expenditures between different formats of information resources and to expand partnerships to sustain the level of access to these resources, as well as to develop new solutions in order to meet new needs.

Providing centralized access to scientific and technical journals has always been an important function of the Library. The Library has increased online subscriptions and captured more open access journals in order to facilitate this access. The number of e-journals offered by the Library has grown by more than 50 % in the last year.

In response to the increasing demand for digital content distribution and access, the IAEA Library and INIS, in collaboration with the Publishing Section, have implemented a project to preserve and provide on-line access to the full text of out of print IAEA publications. This comprises 402 volumes and 115 944 pages which were digitized and made available in 2012. Through expanded partnerships with, and among an ever increasing number of International Nuclear Libraries Network (INLN) members, the Library has been given valuable opportunities to enrich information sharing and closer collaboration among these members, improving the services offered to Library customers. The role of the IAEA library as a repository for nuclear information is being enhanced to reflect IAEA activities. Scientific and technical publications and documents related to peaceful applications of nuclear energy will remain at the core of IAEA Library collections. The Library will continue to maintain and preserve information resources and IAEA publications in both print and, where appropriate, electronic format to ensure the availability of this information in support of current and future IAEA activities.

Library Services

Visitors to the Library grew by 25% between 2011 and 2012, and loans increased by 26%, due to the expansion of new book displays, the enhancement of its outreach activities, information coaching for newcomers and customized services.

Increased loan statistics indicate the continuing demand for printed material, while demand for electronic formats, both established and emerging, continues to increase.

The Library continued to develop centralized electronic journal delivery services, including delivering the table of contents to the user. The number of deliveries to e-journal users increased by 15% in 2012.

Customized, in-depth research support services were offered on a wide range of topics, increasing the number of user requests by more than 15%, while the number of general reference questions leaped 10%.

Responding to customers' demands for personalized packaging of products and services, the use of personalized user profiles doubled and the number of information packages delivered increased by 14%.

Due to the high cost of scientific and technology journals, it is impossible to cover all the relevant information, resulting in more dependence on interlending and document delivery services in order to fulfill information needs and offer viable alternatives to the acquisition of resources. The number of requests for such services remained relatively constant in 2012.

Enhanced Catalogue

The IAEA Library re-designed the library catalogue, which now displays book covers in both short title listings and full catalogue entries. Clicking from the title screen on the table of contents allows you to find additional information. It is also now possible to narrow results by author, subject, year, language, and format. An increase in loans shows that library customers recognize and value these enhancements. The Library is exploring ways to provide access functionality that goes beyond the resources available in the Library databases, extending the full range of digital resources that can be delivered directly to the users' desktop.

User Outreach

The IAEA Library has created more innovative communication and outreach programs to customize the way users are informed about IAEA Library resources and services. The Library expanded regular training and outreach programmes by engaging in building customer relationships, not only within the organization but also among other international organizations. The IAEA Library became part of the Joint Vienna Based Organizations (VBO) Orientation, the United Nations Institute for Training and Research (UNITAR) Multilateral Diplomacy Programme, and offered embedded training in various IAEA Sections. The Library continues to seek new partnerships and to explore new areas of collaboration. The Library began hosting special events and lectures targeted to community partners, offering opportunities to discover the collections and services offered by the Library. In order to better connect with Library customers, the Library News has created innovative ways to promote Library resources and services. Creating new outreach opportunities is the way forward for the IAEA Library.

The IAEA Library will make staff and financial resources available and accessible to ensure that the best use is being made of their unique content and capabilities. The IAEA Library will continue to identify, select, organize, index and catalogue high-quality and important information resources acquired by the Library, or to which the Library has obtained access, that support the work of the Agency and its staff, in all available formats (print and electronic, available locally or remotely). The Library will foster a culture of access rather than ownership

and continue to build customer-oriented services.

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The International Nuclear Library Network (INLN): Achievements in 2012

The availability of digital resources, of both open and controlled access, continues to grow, while subscription costs put an extra strain on the Library budget. At such times, the International Nuclear Library Network (INLN), while respecting copyright rules, offers a unique solution to participating libraries: the exchange of resources and knowledge on nuclear information management, which is the Network's core business. In 2012, the INLN steadily contributed to global nuclear information and knowledge management, and has now established a stable position in the nuclear information field. The increase in 2012 of INLN members from 35 to 42 attests to this.

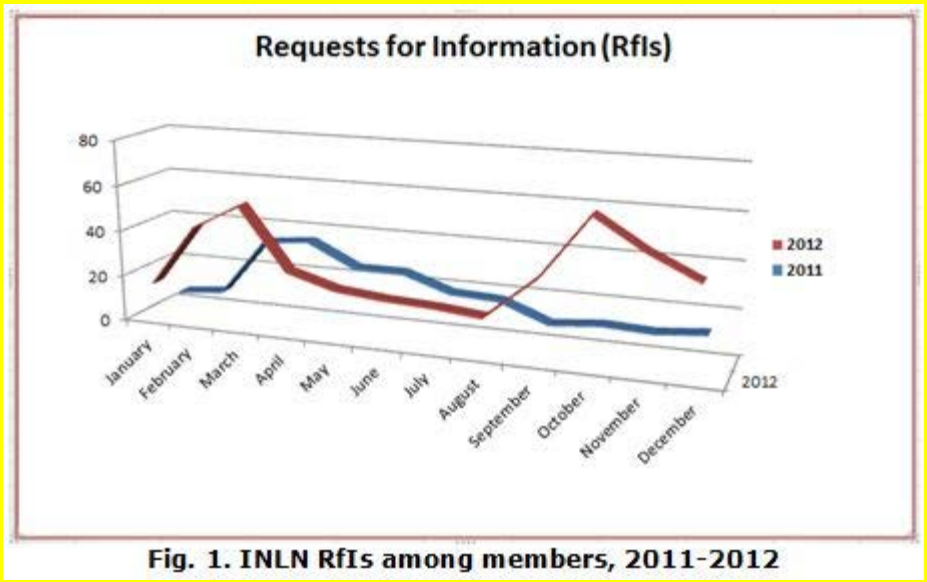

Fig. 1. INLN RfIs among members, 2011-2012

Moreover, decisions taken during the 3rd INLN Members Meeting in Vienna on 5 October 2012, have established the strategic direction of the INLN, as well as paved the way towards the creation of a close-knit community engaged in the management of nuclear information and knowledge. Outreach activities suggested at the Meeting have already been undertaken. The INLN is now a member of both the Association of European Research Libraries and the Special Libraries Association. At the same time, the INLN Web Coordination Group consisting of INLN members from Argentina, Brazil, Canada, Ireland, Mexico and the IAEA Library has already been established and is constantly exchanging opinions over issues relating to the enhancement of the INLN web presence and the introduction of new technologies into workflows. A draft of a Practical Arrangement, assuming no legal or financial obligation for the INLN member, but rather putting into writing the benefits and requirements of each INLN member, is currently being developed by the IAEA Library. The role and objectives of the INLN will be continuously evaluated, and the Web Coordination Group, functioning in the fashion of a Steering Committee, will put forward ideas and suggest future actions to be ratified by all members during the INLN member meetings.

As for the flow of Requests for Information (RfIs) in 2012, their substantial increase is shown in Fig. 1; 47.5% compared to RfIs traffic in

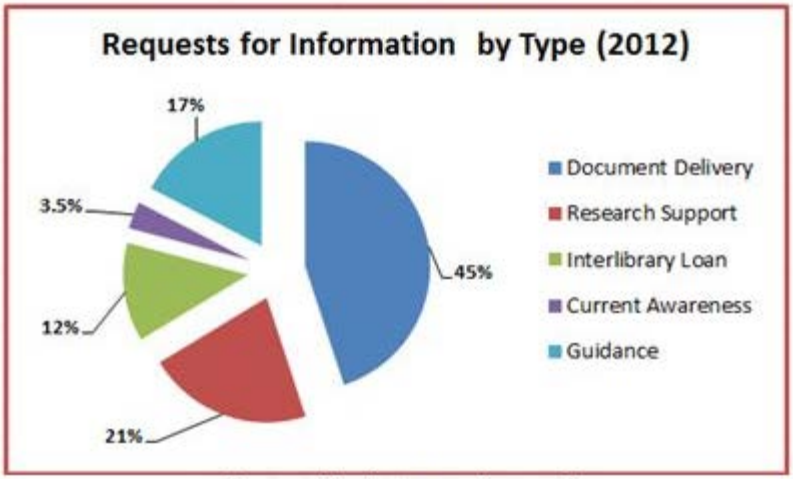

Fig. 2. RfIs by type (2012)

2011. In total, 398 requests were met, either by the IAEA Library or other participating libraries. Observing fluctuations, it is apparent that in 2011, the majority of RfIs were met during and after the Fukushima Daiichi nuclear accident, while in 2012, the majority were met before, during and after the INLN Member Meeting in Vienna. RFIs by type are broken down in Fig. 2. As in previous years, Document Delivery Services (DDS) continue to remain the major attraction of the INLN, representing the largest share of requests. Research support service and requests for interlibrary loans still remain a strong benefit for INLN members. However, it is requests for guidance on nuclear information resource and service management, an INLN service introduced in 2011, which more than doubled in 2012, a share of 17% of all requests. In 2011, the equivalent was 7% of all requests. This marks a steady trend for the future of the INLN. It also enforces the nuclear knowledge sharing aspect of the Network, as nuclear information professionals, increasingly faced with challenges posed by the non-stop advent of new technologies and tools turn to each other for consultation.

As nuclear libraries and information centres enter a new cycle of transition, new digital information services are being introduced and a new model for library management is gradually materializing. This gives the INLN the potential to hold a strong position and offer its members both a vision and a helping hand. It rests with the members to take up this challenge.

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The History of Digital Preservation at INIS

Since its creation in 1970, the International Nuclear Information System (INIS) collects and disseminates non-conventional literature (NCL) received from Member States and international organizations[1]. Initially, INIS received paper based NCL documents which were microfilmed in-house[2] and stored in the INIS archives. In 1997, the INIS Secretariat replaced the microfiche-based production system with an imaging system to process, preserve and disseminate all NCL documents in electronic format. This marked the beginning of digital preservation efforts that continue today.

The INIS digital preservation technical infrastructure has evolved on a regular basis since 1997. Its history can be divided into three periods:

- 1997–2003: INIS Imaging System (INISIS)
- 2003–2009: INIS Imaging System 2000 (INISIS2K)
- 2010 to present: Current technical infrastructure

This article provides an overview of the digital preservation practices and the technical infrastructure of INIS. It describes the hardware and software used, as well as some practices related to scanning and quality control. The digitization of the INIS microfiche collection, a unique archive containing over 1 million physical assets, including more than 312 000 non-conventional literature reports, was described in detail in INIS Newsletter No. 13, September 2012[3]. The digitization of this archive will lead to a collection of approximately 17 million pages of full texts.

INIS Imaging System (INISIS) — (1997–2003)

In 1997, Jouve Systems was selected as a full-scale imaging system to process and disseminate INIS NCL in electronic format[4]. This 'cradle-to-grave' image-based solution replaced the microfiche-based production system which had been in place at the INIS Secretariat since 1970. The following modules were already part of the original design: workflow monitoring, black and white scanning, image import, image enhancement, quality control, link creation using barcode recognition, link validation against INIS bibliographic metadata and INIS rules, cumulative index creation, as well as CD-ROM production according to the INIS NCL Viewer specifications (INISIR).

Originally conceived to support TIFF Group 4 file format only, the system was modified in 2002

to accept a growing number of incoming full texts in PDF. The Jouve system was discontinued in 2003 after a phased migration to the new INIS Imaging System (INISIS2K).

INIS Imaging System 2000 (INISIS2K) — (2003–2009)

In 2000, a study carried out by Doculabs[5] recommended building a new INIS Imaging System (INISIS2K) on a leading 'off-the-shelf' 32-bit information capture system. Among the shortlisted products, INIS selected ActionPoint InputAccel[6] , mainly because of its powerful open architecture technology that allowed customization and system integration with Open-Text Livelink[7], the IAEA standard Document Management System. InputAccel also met new requirements such as colour scanning, optical character recognition (OCR) and output to PDF.

The replacement of the INISIS imaging system led to a significant improvement in the production cycle, which was synchronized with the bibliographic database production. All documents were output in PDF and those in Western European, Cyrillic and Slavic scripts were OCRed[8].

From the beginning, INISIS2K was conceived and implemented as one of the components of a larger system, a completely overhauled INIS Data Processing System (IDPS) based on Livelink technology. All tasks, from the initial imaging request sent to the InputAccel server until the ingestion of its PDF output into the document repository, were monitored through Livelink. This was also the case for the quality control of bibliographic data, the ingestion of NCL input submitted by the National Centres in PDF format, the migration of all new records to the INIS Online Database, and finally for the preparation of an ISO image for distribution of the full texts on CD-ROM.

In 2006, in order to streamline workflow, improve efficiency and free resources for other activities, the INIS Secretariat issued revised 'Guidelines on How to Submit Full Text of Non-Conventional Literature (NCL) to INIS'[9]. The INIS National Centres were strongly encouraged to submit their NCL input directly in PDF and the response from Member States was favourable.

Three new priorities were identified: the digitization of the INIS microfiche collection, the conversion to PDF of all the documents scanned and distributed in TIFF between 1997 and 2003, and the on-line access to full texts via the INIS Online Database[10].

Although highly efficient when introduced in 2003, InputAccel lacked flexibility when it came to the development of workflows tailored for other digitization projects. The maintenance of this modular client/server application was also very expensive and required significant effort from the in-house IT group. The InputAccel system was phased out during the migration of all desktops to Windows 7 in 2010.

During this period, the INIS imaging infrastructure consisted of 4 scanning workstations, 3 Quality Control workstations, 3 servers, 4 high performance scanners, 2 flatbed scanners, 1 high performance microfiche scanner and 1 digital camera. The technical characteristics are indicated in the table below.

Scanner	Type	Paper size	Resolution (dpi)	Bit-in-depth	Speed (A4, 200 dpi)	ADF Page capacity
Fujitsu fi-5750c with VRS Pro	Colour; ADF/flat bed	A8 – A3 Up to 34 inches	50 to 600	24	110 p/min (simplex) 55 p/min (duplex)	200 p./
Kodak i260	Colour; ADF/flat bed	A5 – A3	Up to 600 Optical Resolution 300	16-48	50 p/min (simplex) 100 p/min (duplex)	150 p
Fujitsu M4099D	B&W; ADF	A7 – A3	200, 240, 300, 400	10	90 p/min (simplex) 180 p/min (duplex)	1000 p
Fujitsu M3099GX	B&W; ADF	A7 – A3	200, 240, 300, 400	8	60 p/min (simplex) 120 p/min (duplex)	1000 p
Fujitsu M3099G (back up)	B&W; ADF	A5 – A3	200, 240, 300, 400	8	55 p/min (simplex) 110 p/min (duplex)	500 p
SunRise 2000	Microfiche scanner	A0-A4 reductions 7x-50x	CCD 3600-8800 True Resolution		Up to 2500 frames/hr	

Table 1: Imaging Infrastructure 2003–2009

Current Technical Infrastructure (2010 to present)

In 2010, a complete re-evaluation of the technical infrastructure was carried out. The objectives and expected outcome of the 'Desktop 2010' project[11] was to ensure security and supportability of all computer systems of the IAEA network and the compliance of all equipment and software applications with Windows 7, the IAEA standard operating system.

The 3 Fujitsu black and white SCSI scanners, the Kodak i260 colour scanner, the InputAccel system and some small utilities failed the compliance tests. Also, several old workstations did not meet the minimum requirements for Windows 7 and had to be replaced.

Special attention was paid to ergonomics while planning the new work environment. The number of workstations was reduced by almost 50% by procuring new computers with fast quad-core processors supporting multithreading and multitasking. The number of scanners was also reduced to two, both of which support colour, greyscale and black and white scanning. This significant reduction of equipment dedicated to digitization, coupled with an efficient optimization of the digitization tools, helped the INIS Secretariat in their effort to reduce the space required for operations.

Furthermore, the new and flexible technical infrastructure has enabled the INIS Secretariat to support several important digital preservation initiatives within the IAEA. This includes, for instance, the digitization of out of print IAEA publications from Technical Reports, Safety and Proceedings Series, the digitization of the IAEA Bulletin in all official languages, as well as the digitization of historical photographs from IAEA archives. The following software and hardware are currently used for digitization at INIS:

Techsoft PixEdit v.7.11.18: PixEdit was introduced to the imaging workflow in 2000. It is primarily used for its advanced image editing capabilities. This flexible application has proven to be an excellent scanning utility. Since the discontinuation of the InputAccel system in 2010, PixEdit is the main scanning application. Five seat licenses are currently available.

ABBYY FineReader 11 Corporate Edition: FineReader is used for Optical Character Recognition (OCR). It can process mono or multilingual documents, supports different alphabets, including Cyrillic, and offers an accuracy level of close to 98%. ABBYY policy for this product is to release a new version each year. Version 11 was purchased in 2011, together with an upgrade assurance to Version 12.

Adobe Acrobat X Professional is used to OCR Chinese (simplified), Japanese and Korean documents, as well as for document optimization and conversion to PDF/A[12], when applicable.

Kofax Virtual ReScan (VRS) + Kodak Perfect Page: Both technologies have hardware and software components that reduce the need for post-scanning image enhancement.

Scanners: To digitize paper documents, INIS uses 2 colour scanners with automatic document feeder (ADF) and flatbed. One big advantage of this new generation of scanners is that they no longer require time-intensive calibration.

To digitize its microfiche archive, INIS uses 2 high performance microfiche scanners.

The technical characteristics of the scanners are indicated in the table below.

Scanner	Type	Paper size	Resolution (dpi)	Bit-in-depth	Speed (A4, 200 dpi)	ADF Page capacity
Fujitsu fi-5750c with VRS Pro	Colour; ADF/flatbed	A8 – A3 Up to 34 inches	50 to 600	24	110 p/min (simplex) 55 p/min (duplex)	200 p
Kodak i1440	Colour; ADF/flatbed	A5 – A3	Up to 600 Optical Resolution 300	16 - 48	50 p/min (simplex) 100 p/min (duplex)	150 p
SunRise 2000	Microfiche scanner	A0-A4 reductions 7x-50x	CCD 3600-8800 True Resolution		Up to 2500 frames/hr	
SunRise Apollo	Microfiche scanner	A0-A4 reductions 7x-50x			Up to 3600 frames/hr	

Table 2:- INIS Scanner Specifications

Conclusion

The technical infrastructure in place at the INIS Secretariat has allowed for the conversion to microfiche of over 312 000 non-conventional literature reports received from Member States and international organizations between 1970 and 1996. The migration to a scanning environment in 1997 was an important milestone in INIS history. This marked the beginning of digital preservation and was the first step towards building a durable digital repository which now contains over 475 000 full texts in PDF format, with 21,3 million pages of full texts and 597 gigabytes of data. Large digitization preservation projects, such as the digitization of the INIS microfiche collection of historic non-conventional literature, require substantial funds, qualified staff, and adequate software and hardware tools.

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[5] http://www.doculabs.com

[6] Now part of the EMC-Captiva family (http://www.emc.com)

[7] Livelink was the first Web-based collaboration and document management system made by the OpenText. http://www.opentext.com/2/global/products/products-all/livelink-landing.htm

[8] INIS (2004). INISProgress and Activity Report 2003. L2.04.01/INIS-PAR/2003. Retrieved from http://goo.gl/nXe4p

[9] INIS (2006). New Guidelines for Submission of Non Conventional Literature (NCL) full text to INIS. INIS Technical Note No. 185

[10] The INIS Online Database was based on the BASIS Search technology. It has been replaced in April 2011 with the INIS Collection Search (ICS), which is based on Google Search Appliance (GSA) (http://www.iaea.org/INIS/). To find out more about the history of the INIS Collection Search, see http://www.iaea.org/inis/products-services/newsletter/INIS-Newsletter-2012-13/2012-13-04/index.html

[11] The 'Desktop 2010' project was developed by the IAEA Division of Information Technology (MTIT) and implemented in the whole INIS working Unit by the Systems Development and Support Group (SDSG). INISProgress and Activity Report 2010. Retrieved from http://goo.gl/s3yQe

[12] PDF/A is an ISO-standardized version of the Portable Document Format (PDF) specialized for the digital preservation of electronic documents. http://www.digitalpreservation.gov/formats/fdd/fdd000360.shtml

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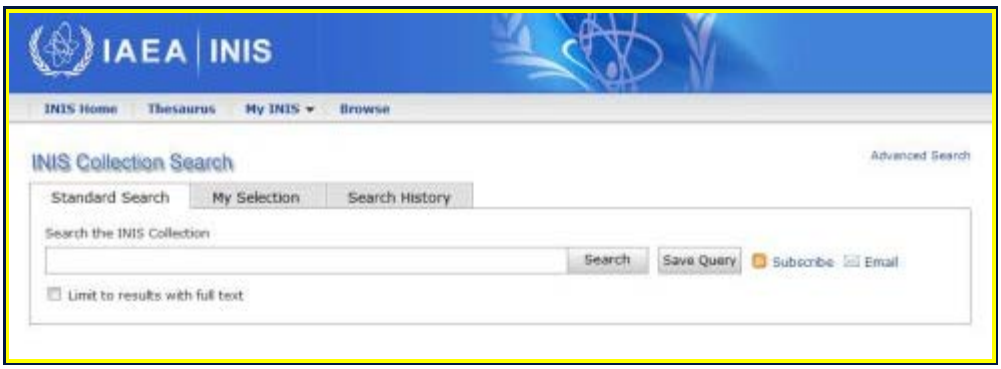
INIS Collection Search Developments

The INIS Collection Search (ICS) is the gateway to both the INIS Collection and the IAEA Library bibliographic records. The INIS Secretariat continued investing in the development of new ICS features. Since September 2012, two additional versions of the ICS have been released, increasing the amount of information accessible through this web application and improving its usability and efficiency.

The most significant improvement was the integration of the IAEA Meetings on Atomic Energy (MoAE) database. This new feature is the result of successful collaboration with the IAEA Nuclear Knowledge Management Section, which maintains the MoAE database.



For queries performed on the ICS, the three most relevant meetings from the MoAE database will be displayed at the top of the search results page. Users can also access the entire subset of meetings related to the given query, and can further filter the meeting results by either country or meeting type.

In addition to the integration mentioned above, the following enhancements were implemented:

- Improved usability
  The capability of the ICS to work with new software technologies and with more restrictive browsers, such as those not supporting JavaScript, has been increased. Bibliographic records saved in users' workspace can be translated into all official IAEA languages as well as in German and Japanese. Citations can be manually downloaded in Research Information Systems (RIS) format, making them compatible with other databases that support this format. Selected search results can now be exported directly to either RefWorks or EndNote databases, allowing the user to manage search results from the INIS database outside of the ICS web application.

- Enhanced search results page
  The number of results for a given query is now fully accurate, instead of an approximation. Further filtering of results from a given query is now possible by selecting Publication Year and/or INIS Volume, as well as Country and/or Language. Users can see the size of the PDF file, if such a file is associated with the record result.

- Emailing search results
  Search results can now be sent to any email address. The results can be customized by selecting:
  - Format: plain text or HTML
  - Number of results to be shown in the email
  - Inclusion of only the search results page URL
  - Inclusion of a customized message

- Quick browse and search
  By clicking on the 'Browse' link, the list of subject categories and the top 10 searches performed on ICS can be quickly browsed. Users may continue by clicking on any of the available links to perform the respective search.

The improvements made to the new ICS are in line with the concept of a simplified, powerful and more efficient 'single access point' to different repositories, giving the user a wider information portfolio accessed from a single search. NIS will continue to pursue this path, looking for new opportunities to integrate other repositories available within the IAEA Department of Nuclear Energy.

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From FIBRE to FIBRE+

The first version of the INIS 'Friendly Inputting of Bibliographic Records' (FIBRE) application was released in 1991, and made available to INIS centres for input preparation. FIBRE was initially a DOS application used to edit and check text, written in C programming language, and distributed to input centres on 3 and 5 inch diskettes. In 1997, the tool became a Windows application, changing its name to WinFIBRE, and introducing additional visual components written in C++ programming language.

The application has been improved over the last 22 years by adding a spell checker, integrating with INIS authority files, and adding rules to validate a given input field in relation to another one, within the same INIS record. Only minor changes were implemented in the last 10 years, but the development of checking rules for input validation and maintenance of the authority files has continued.

The last release of WinFIBRE in 2012 introduced two new features. A Category Match Value (CMV) check was introduced to indicate the correctness of a descriptor and its level of association to a given category, or how accurately a category corresponds to the indexing. A 'check for the number of descriptors' was also added to indicate whether a record is insufficiently indexed or over indexed.

In March 2013, FIBRE+ 1.0 replaced WinFIBRE 3.0.9, maintaining the same functionalities for INIS input preparation, yet adding powerful new features made available to input centres on the IAEA FTP server. FIBRE+ is written mainly in C++ and Perl 5 programming languages, using only standard Windows components. FIBRE+ 1.0 was built, tested and is supported for the 32-bit version of both Windows XP and Windows 7. The application was also tested on 64-bit versions of Windows 7, but full compatibility is not guaranteed.

FIBRE+ 1.0 introduces two new features:

- Unicode compliance
  New INIS special characters were introduced, growing from an initial 72 to more than 2000, thus allowing the use of Unicode characters. Copy-paste functionality was changed to ease the use of these Unicode characters. An optional preview pane is also available to show INIS special characters as Unicode characters, as well as to interpret 'subscript' and 'superscript' characters, thus enabling better readability of mathematical expressions, chemical formulas and words with Unicode characters.

- New ‘Capture/Edit’ dialog
  A new dialog window allows users to edit a single record tag at a time. The editing functions include, among others: the option to change the case of the letters, the creation of superscript/subscript, and the ability to adjust dates.

FIBRE+ provides new scenarios to strengthen cooperation between the INIS Secretariat and input centers. Two additional releases of FIBRE+ are planned by the end of 2013. The new releases will empower input centers, allowing them to directly amend and replace bibliographic records which are already part of the INIS Collection. Furthermore, a massive re-design of checking rules, and the enhanced management of both INIS Temporary Record Numbers (TRNs) and PDF files will take place. New selective input preparation templates will show only those tags which are necessary, according to the type of record selected. These enhanced features will make input preparation easier and less prone to error.

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New Generation Library Management Systems: Shifting Gears and Standards

Libraries have traditionally been connected to scientific research. Developments in the methods and tools employed by researchers have always had an immediate impact on the workflows and services of research and academic libraries. This could not be more evident as in the case of the IAEA Library, which was created to support all research carried out by the IAEA on both technical and managerial levels. As scientific research has become data intensive, linking, exploring, and analysing big datasets lies at the core of modern science. Furthermore, the constantly rising need for digital content has greatly affected the design and management of a library and its resources. For instance, in the last decade, the portion of the IAEA Library's budget spent on covering subscription costs for digital resources has increased by more than 65%. The Library Management System (LMS), the tool that connects a library client and a librarian to library resources, initially designed for the management of print collections, increasingly fails to cater to the diverse material collected by libraries. To amend this, the IAEA Library has decided to undergo the process of changing the currently used LMS, a procedure similar to heart-transplant surgery. Below are the results of the initial research undertaken into the new generation LMS, that will help inform the IAEA Library's decisions.

Current status of LMSs

In the 1990s, a cycle of transition began in library automation development and implementation, reflecting the evolution of the information industry at the time. The majority of research and academic libraries moved towards automating access to their collections, alas not in a homogeneous manner. However, the evolution of Web 2.0, the convenience of the relevancy ranked search results promulgated by Google, and the convergence of media industries has pushed libraries and LMS vendors to redesign the LMS. Library websites now offer access to unconnected silos: e-journals, the catalog, databases, subject guides, ambiguous discovery services, all accessed separately. Moreover, e-books have entered the library stream, while the dominance of print collections is gradually receding without, of course, having their importance diminished, especially for research/academic libraries. Library workflows have also been modified to accommodate these changes. In the IAEA Library alone, information services continuously expand to incorporate closed and open access digital resources while simultaneously, the number of library staff is steadily decreasing. Libraries, in general, have prepared specifications for new library management systems which are long, detailed documents with necessary or desired characteristics. However, what libraries have really been seeking is a new model of library management. Until now, new systems only

promised to offer such a model.

The new generation LMS

The rapidly expanding technological landscape, the current traits of peoples' online information behaviour and their expectations, along with the emerging trends of linked data and open access, are basic factors in the design of the new, web-scale LMS. Vendors in the LMS market have developed, or are now developing, such systems. Experience derived from implementing any of those new systems has not yet grown into a body of literature that can be consulted. However, some distinctive features are already discernible.

All new systems promise comprehensive electronic resource management. Silos are no longer present. Indeed, there is no reason to have multiple platforms and multiple metadata formats to manage different types of library materials. The new LMS is a Library Services Platform, i.e. library specific software designed to automate the managing of diverse collections, as well as internal library operations, fulfilment of requests and delivery of services. It also combines open APIs to explore platform services, catering to extensibility and interoperability. Vendors have traditionally sold an LMS – in our case the Services platform – as a series of modules which libraries can buy one at a time. It follows that the more modules a library buys, the greater the capacity of the LMS. This, of course, has financial implications. Furthermore, e-book management is currently not part of the available library services platforms. E-book management platforms do exist and are available as modules that dock on the new LMS.

The new LMS has also been marketed as allowing for flexible metadata management (MARC, Dublin Core, VRA, ONIX, Bibframe etc.), moving away from locally managed metadata to globally shared workflows. Standards, however, are currently in a state of flux and new standards are being proposed to replace existing ones – MARC to Bibframe, AACR2 to RDA, ONIX, ODI and OAI. Additionally, requirements for digital content may bring about new, unforeseen metadata structures, which a new LMS must accommodate.

New systems reflect the changes in library workflows. They boast of consolidating print, digital and electronic workflows and unified management. However, workflows are not always as linear as systems developers would have us think. For instance, acquisition functions may involve 5 to 8 people per transaction, with some of them residing outside the library (vendor, parent organisation, legal and/or finance department). Whether or not the new LMS design has incorporated this basic notion behind library work remains to be seen.

Following the trend of software as service, almost all vendors offer some 'cloud-based' services. This move is a real game changer. For the first time, server management moves from library to vendor. Globally shared data and metadata will allow libraries to reach new levels of cooperation, enhanced services delivery and operational efficiency. On the other hand, hosting services externally does not deliver the savings it promises, while in some libraries it conflicts with information security policies set out by parent organizations.

Finally, all new systems require a discovery layer which integrates seamlessly with the new LMS. Based on index-based searching, it incorporates a unified search interface that promises to make retrievable as many resources offered by the library as possible, plus other pre defined sources. Relevancy ranking of results is included, as well as faceted search, social tagging of records, RSS feeds for searches, social media options, linking to open access content, and all traditional OPAC features. As indexes grow in comprehensiveness and depth, the discovery layer, a module of the new LMS, provides library clients with many options. Some of these include searching a subscribed database, the catalog, e-content (e-books, e-journals etc.), pre-selected subscription databases, search or metasearch engines and open access sources, all in one go. They can then exploit available data in manifold ways. The Open Discovery Initiative (ODI) was established to investigate standards and best practises for discovery services, since they are newcomers to the field. The discovery Layer, an essential part of the new LMS, will considerably upgrade the library's position in the digital information landscape, but librarians still

need to examine whether it delivers on its promises.

A new cycle of transition

The new Library Management System will substantially change the way libraries manage their resources and deliver services. Moving into an era of interrelated knowledge bases, the new LMS will surely reposition the library in the information industry. Available systems, however, have not yet been widely evaluated and knowledge about their implementation and performance is only now being compiled. Relevant standards are being revisited or rewritten, while technological developments redefine the library management model. For the IAEA Library, flexibility and the ability for extended, local customization remain the overarching principles of any system. For any library deciding to implement a new LMS in such a period of transition, the golden rule set out in 1931 by S. S. Raganathan, the father of library science, still applies: “Save the time of the reader”.

Vendors Overview

GRANT, CARL, The future of library systems: library services platforms, Information Standards Quarterly, 4 (2012), available online: www.niso.org/publications/isq/2012/v24no4/grant/

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Meetings

INIS at the Nuclear Information Technology (China) Forum 2013, Shanghai, China

At the invitation of the organizing committee of the Nuclear Information Technology (China) Forum 2013 (NITF 2013) scheduled 8–9 August in Shanghai, China, the INIS Secretariat was invited to give a speech about INIS and its benefits This is a great opportunity to present INIS at the Forum, with an expected 200 participants from various countries, generating interest in INIS and reaching out to potential contributors and users in the nuclear power industry.

INIS Training Seminar 2013

The International Atomic Energy Agency will host the INIS Training Seminar from 7–11 October 2013 at its headquarters in Vienna, Austria. The seminar will focus on INIS input preparation, the utilization of INIS products and services, and on ways to promote the system to users in Member States. Training on all aspects of INIS input preparation, submission of non-conventional literature (NCL), usage of INIS products and promotion of INIS will be provided during the seminar. The training course will consist of lectures in the form of presentations, followed by discussions to allow an exchange of information. Practical sessions on each specific topic are also planned, together with hands-on training using computer training facilities.

Fifteenth International Conference on Grey Literature

The Fifteenth International Conference on Grey Literature will be held in Bratislava, Slovak Republic, from 2–3 December 2013. This year's theme is: The Grey Audit: A Field Assessment in Grey Literature. This conference offers an inclusive platform from which to assess developments in the field of grey literature. Changes over the past two decades give sufficient cause for an audit in the field of grey literature – drawing upon accomplishments, assessing limitations, and projecting a sustained course of action. A field assessment of grey literature extends well beyond library and information science, for it includes the assessment of grey literature produced and published in other sciences as well as government, business and industry. INIS will make a presentation on its digital preservation activities, have a poster displayed at the poster session, and moderate day two of the conference.

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