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***CENDI*: A STRATEGIC INTERAGENCY ALLIANCE IN THE 1990s**

**JOSEPH CAPONIO, ELIZABETH BUFFUM, GLADYS
COTTER, KENT SMITH, KURT MOLHOLM**

The *CENDI* Group is a government interagency cooperative organization formed to improve federal research and development (R&D) productivity and R&D information management systems through information exchange. The five member agencies -- the Departments of Commerce, Energy, Defense, and Health and Human Services, and the National Aeronautics and Space Administration -- sponsor more than ninety percent of federally funded R&D. Since information is a critical need in the research process, each of these agencies actively gathers and processes information from its own research and research by others, including foreign information obtained through international exchange agreements. Each of these agencies maintains scientific and technical information (STI) databases of both on-going and completed R&D efforts, and *CENDI* provides a means for its members to share technologies, resources, ideas, information, management activities, and standards.

***CENDI* PRINCIPALS**

Scientific and technical information (STI) managers or principals from the five member agencies comprise the *CENDI* interagency group. The principals collaborate under a Memorandum-of-Understanding (MoU). The table below lists the five member agencies and their STI managers.

Agency	STI Activity	Principal	Alternate
U.S. Department of Commerce	National Technical Information Service	Joseph F. Caponio, Director	Robert Freeman
U.S. Department of Energy	Office of Scientific & Technical Information	Elizabeth Buffum, Acting Manager	Mark Fornwall
National Aeronautics and Space Administration	Scientific & Technical Information Division	Gladys A. Cotter, Director	John H. Wilson
U.S. Department of Health & Human Services	National Library of Medicine	Kent Smith, Deputy Director	Elliot Siegel
U.S. Department of Defense	Defense Technical Information Center	Kurt N. Molholm, Administrator	Marcia Hanna

History of Cooperation

In the 1960s, under the aegis of the Committee on Scientific and Technical Information (COSATI), Federal Council on Science and Technology, the managers of STI programs in the Federal government adopted standard guidelines for cataloging technical reports. Through interagency agreements, agencies exchanged bibliographic tapes and cooperated on specific projects of interest. In the mid 1970s, COSATI was phased out due to changes in administrations and priority areas.

From the mid-1970s through the mid-1980s, the five member agencies cooperated on an ad hoc basis. Beginning in 1982, the STI managers established regular but informal meetings to further cooperation. In 1984, a formal Interagency Agreement, signed by the STI managers, chartered *CENDI*. In 1987, the National Library of Medicine joined the *CENDI* group through a MoU Amendment. The cooperative activities grew to the point that ad hoc administration of the group gave way to the establishment of a *CENDI* Executive Secretariat. The Secretariat provides program management support services to *CENDI* principals and working groups. This includes expert technical assistance with regard to information policy, interaction with the technical community and operational support such as organizing meetings and technical sessions. In general the Secretariat has a proactive role in developing opportunities for interagency cooperation. Bonnie C. Carroll is the current *CENDI* Secretariat Director.

Working Groups

Six formal working groups conduct *CENDI* programs in areas of mutual interest. A listing and sample activities of the groups are given below:

ACCOMPLISHMENTS OF THE CENDI WORKING GROUPS

Cataloging Standards Group

chaired by Claire Tozier (DTIC)

- Revised ANSI/NISO Z39.23. ANSI/NISO approved and published *The American National Standard Technical Report Number (STRN) Format and Creation*, ANSI/NISO Z39.23-1990 in 1990.
- Produced a *CENDI Format for Foreign City Authorities* used as a reference tool by all agencies.
- Revised the *CENDI Cataloging Guidelines* used by all agencies.
- Created a *CENDI* format to catalog non-print media such as floppy disks and videotapes.
- Redesigned agency RDPs to create a joint *CENDI Report Documentation Page (RDP)* which is included in ANSI/NISO Z39.18-1987.
- Produced a database for the *Report Series Codes Dictionary*, 3rd Edition published by Gale Research Company.

Indexing Group

chaired by M. Catherine Grissom (DOE)

- Submitted proposed projects for study. The proposals include: assess machine-aided indexing; inventory present verbalization rules used to input scientific notations; and identify common thesauri subject terms.
- Undertook study of verbalization standards of various agencies.

Standards (Technology) Group

chaired by R. L. Scott (DOE)

- Established forums to share standards expertise among agencies.
- Established ties with experts in the area of electronic information exchange standards.
- Began study of national and international standards related to *CENDI* agency operations.
- Members from other agencies such as National Institute of Standards and Technology are active participants.

User Education Group

chaired by Marcie Stone (DTIC)

- Held first Acquisitions/Selection Seminar on October 23, 1990. All five agencies participated in talks that covered selection policies, types of acquisitions included/excluded in the databases, database content, procedures for acquisition, and document exchange with other organizations.
- Maintains the *CENDI* Consolidated Exhibit Schedule.

Networking Group

chaired by Judy Hunter (NASA)

- Recently established to explore the various agencies networking projects to identify opportunities for experience sharing or joint projects.

Directory Working Group

chaired by Jerry Barton (NOAA)

- Recently established to explore joint interests in information locators and directories, especially standards.
- Expanded its membership beyond *CENDI* agencies because of other agency interest in directories.

The Five CENDI Agencies

Department of Commerce

National Technical Information Service (NTIS)

The National Technical Information Service (NTIS), in Springfield, Virginia, is the cornerstone of the U.S. government's STI dissemination structure. An agency of the U.S. Department of Commerce, NTIS is the central source for the public sale of U.S. government-sponsored research reports and electronic products. The user community includes scientists, engineers, business people, librarians, and information specialists in government, academia, and the general public.

In 1945, President Truman established the Publications Board to review all government-generated scientific and technical research documents produced during World War II. The purpose was to determine what could be made available to U.S. industry and the general public. In 1950, Public Law 81-776, directed the Department of Commerce to operate a national clearinghouse to collect and distribute STI. In 1970, this clearinghouse was reestablished as the National Technical Information Service. Since its beginning, NTIS has been self-supporting.

NTIS provides information management to agencies whose documents and machine-readable data files are submitted. NTIS creates a bibliographic record for each item, lists each item in its online database and current awareness publications and maintains the item in its archives.

The NTIS database is a very diverse collection based on a fairly wide range of sources, which has varied over the past forty-five years (1945-90); and it is primarily a collection of reports, as compared to journal articles in the open literature. The NTIS Bibliographic Database consists of government sponsored R&D and engineering reports; federally-generated machine-readable data files and software; and U.S. government inventions available for licensing. Also included are reports from non-U.S. governments; current foreign research and technology reports; and translations. The FEDERAL Research In Progress (FEDRIP) Database provides access to information about ongoing federally-funded research projects in the fields of physical sciences, engineering, and life sciences. Over ten federal agencies input data to FEDRIP. Other databases include: Federal Applied Technology, Agriculture Online Access, National Institute for Occupational Safety and Health Technical Information Center, Agriculture Science and Technology, Energy DataBase, and Selected Water Resources Abstracts.

The major contributors to the NTIS database are NASA, DoD, and DOE. In addition, twenty-five percent of all new titles is from foreign sources, through various international exchange agreements. The total online collection approaches 2 million titles,

dating from 1964 through 1990. Printed or microform indexes provide access to the titles that predate the online database.

Today, commercial database suppliers such as *DIALOG*, *ORBIT*, *STN*, and others provide electronic access to STI collected by NTIS worldwide.

Department of Energy

Office of Scientific and Technical Information (OSTI)

The Office of Scientific and Technical Information (OSTI) in Oak Ridge, Tennessee, is the Department of Energy's (DOE) national center for managing and disseminating scientific and technical information. OSTI provides direction to DOE program offices and their contractors related to information management issues such as strategic planning, database development and evaluation, and technology transfer. OSTI serves the academic and business communities and the general public through the U.S. Government Printing Office and NTIS.

The OSTI online databases of bibliographic information represent a major national resource of nuclear science and energy STI, as well as extensive coverage in areas such as physics, radiation, environmental science, and military technology and arms control. The three major energy databases are: (1) Energy Science and Technology Database; (2) Nuclear Science Abstracts (NSA); and (3) the Research in Progress File.

The OSTI acquires domestic information from DOE and its contractors, other U.S. government agencies, private organizations, and professional societies. In addition to information acquired from domestic sources, DOE acquires information through international partnerships with the International Energy Agency's Energy Technology Data Exchange, a consortium comprised of members from Europe, Japan, Canada, and the United States; the International Atomic Energy Agency's International Nuclear Information System, representing eighty countries; and bilateral agreements with other foreign governments. Of the more than 3 million items online, nearly fifty percent of the database is from foreign sources.

In the United States, *DIALOG* and *STN International* provide electronic access to this energy-related information.

National Aeronautics and Space Administration

Scientific and Technical Information Division (NASA)

The NASA Scientific and Technical Information Program (STIP) is headquartered in Washington, D.C. with component operations distributed worldwide. The NASA STIP, established as a result of the Space Act of 1958, has two primary objectives. The first of these is to preserve the role of the United States as a leader in aeronautical and space

science technology; the second is to provide for the widest appropriate dissemination of the results of NASA research and development. The NASA STIP achieves these objectives through an extensive array of domestic and international activities which target the creation, collection, and dissemination of NASA related scientific and technical information (STI). The subject content varies from aeronautics and astronautics to chemistry, engineering and earth sciences. The NASA STIP also has responsibility for generating and implementing policy related to STI issues.

The NASA STIP creates STI in two ways: appoints experts to document NASA R&D endeavors, and assists NASA offices to create electronic databases which contain actual STI or references to source documents. The STIP Office supports a translations activity which provides translations into English of STI from over 30 foreign languages.

The collection of STI is accomplished through policy which requires the results of NASA STI be provided to the NASA STIP, through cooperative agreements with other U.S. government organizations, through international exchange agreements, and through acquisition of STI contained in journal and open literature sources. At the present time, NASA STIP has international exchange agreements with the European Space Agency (ESA), Australia, Canada, Israel, and Japan, and acquisition officers in the USSR. The STI collected via these channels is provided to the Center for AeroSpace Information (CASI), located in Baltimore, Maryland. The CASI is the central processing facility for the NASA STIP. At CASI, the bibliographic information related to the source STI is processed into the NASA databases, from which announcement products are generated.

NASA STIP uses print, microfiche, and online services to disseminate information. Users registered with NASA can order documents from the CASI and can use NASA's online system, *RECON*, to search the electronic databases. Of the more than 3 million items online through *RECON*, nearly twenty percent is of foreign origin. Unclassified, unlimited technical reports are made available to the public through NTIS. A portion of the NASA databases is made available to the U.S. public via *DIALOG* as the Aerospace Database. The ESA Information Retrieval Services makes portions of the NASA databases available to select organizations within Europe.

Department of Health and Human Services National Library of Medicine (NLM)

The National Library of Medicine (NLM) is the world's largest research library in a single scientific and professional field. A component of the Department of Health and Human Services' National Institutes of Health (NIH), the Library has long been recognized for its pioneering work in the biomedical sciences. Originally established in 1836 as the Library of the Army Surgeon General's Office, NLM has relocated several times until it reached its present location on the NIH campus in Bethesda, Maryland.

The Library collects material exhaustively in all major areas of the health sciences and to a lesser degree in such areas as botany, chemistry, physics, and zoology. Users of the Library's extensive collection include health professionals and health science students.

The Library's computer-based Medical Literature Analysis and Retrieval System (MEDLARS) was established during the early 1960s to bring the latest information to the health care professional. MEDLARS today represents a family of over forty databases. The best known are MEDLINE, containing over six million journal articles going back to 1966, and CATLINE/AVLINE/SERLINE which together contain over seven hundred thousand records of audiovisuals, books, and journals held by NLM. The total collection today stands at over 4.5 million items, the most unique being a group of rare medical texts and manuscripts dating from 1094 to 1914.

Today, through communications networks, MEDLARS search services are available to individuals and institutions throughout the world. In addition to direct access from the NLM, four commercial networks (*DIALOG*, *BRS*, *PaperChase* and *Mead*) provide access to the MEDLINE database and other NLM files and several private companies make MEDLINE available on CD-ROM.

The NLM has an extensive program of intramural and extramural research and development. The Lister Hill National Center for Biomedical Communications was established in 1968 to develop systems and services to improve medical communications. The National Center for Biotechnology Information was created 20 years later to apply modern computer and communications technology to the burgeoning field of molecular biology and biotechnology. The Library also has specialized programs for toxicology and hazardous substances information and a program of grant support for biomedical communications research and resources. The NLM is the national resource for a network of more than 4000 health science libraries. These libraries handle some two million interlibrary loan requests annually.

Department of Defense

Defense Technical Information Center (DTIC)

The Defense Technical Information Center (DTIC), is located at Cameron Station, Alexandria, VA. Formerly Defense Documentation Center, DTIC is the central depository and secondary distribution center for the collection, storage, and dissemination of scientific and technical documents resulting from or pertinent to the Department of Defense (DoD) research and development efforts. These include documents from outside DoD, domestic and foreign, that are not readily available from other sources.

The Defense Research, Development, Test & Evaluation (RDT&E) Online System (DROLS) permits access to DTIC's three major databases. The Technical Report

Database contains bibliographic citations to nearly 2 million documents in a broad range of subject areas from aviation technology to behavioral and social sciences. Ten percent of the collection is classified, 40 percent is limited in distribution, and the remainder is unclassified unlimited.

The Work Unit Information System (WUIS) Database is a collection of technically-oriented summaries describing on-going DoD research and technology efforts. The Independent Research and Development Database contains descriptions of technical programs initiated and performed by DoD contractors but not wholly funded by DoD. This information is considered proprietary and is only available to DoD organizations.

DTIC's products and services are only available to registered users. Those who are eligible to register include the Federal research community including contractors, grantees, and participants in special programs such as the Potential Defense Contractor Program, the University Research Support Program, and the Small Business Innovative Research Program. DTIC's unclassified, unlimited technical reports are made available to the general public through NTIS.

CENDI ACCOMPLISHMENTS

CENDI's major accomplishments are concentrated in four areas.

- **STI Policy**

CENDI has become active in broad national/international issues that have an impact on STI agency operations.

- **External Relations**

CENDI has interacted effectively with supporters, sponsors, customers, and information intermediaries to enhance and facilitate the flow of STI.

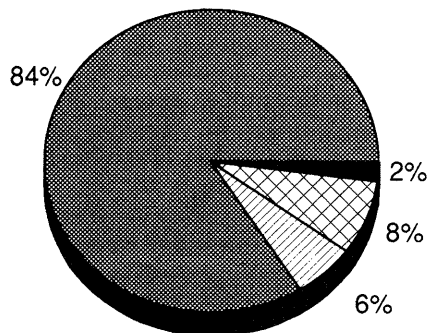
- **User Education**

CENDI has provided cross-training for member agency staff and also focused on programs to inform the user community about the resources of *CENDI* and the agencies it represents.

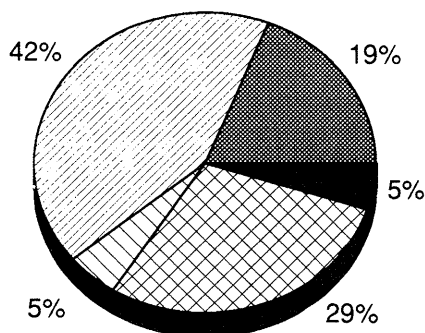
- **Operations**

CENDI has fostered efforts to improve the efficiency and effectiveness of the operations of all participating agencies' services and products.

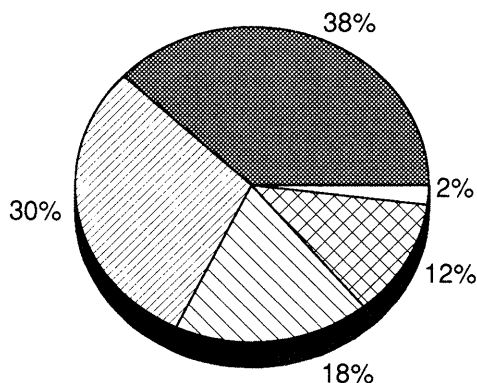
Literature Types Included in CENDI Databases



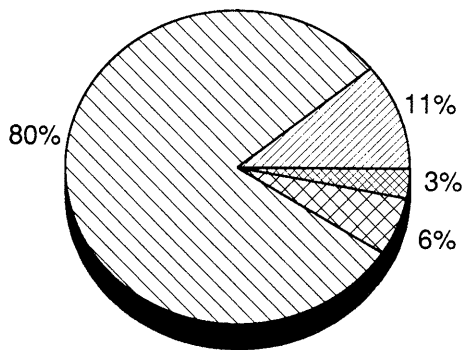
NTIS



DOE

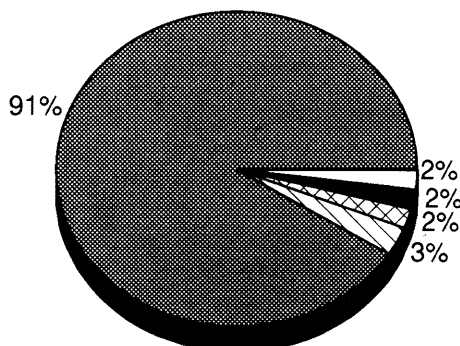


NASA



NLM

(Reflects collected items, not database contents. Journals = journal titles.)



DTIC



CENDI GOALS

CENDI has established four top priorities.

- Work with R&D managers to improve productivity.
- Provide the best technical data and information to all users.
- Improve the effectiveness and efficiency of all *CENDI* agency operations.
- Familiarize R&D managers and policy makers with the value of STI.

Strategy Plans 1991-1992

- Develop a broad based focus for national leadership in STI.
- Design a new national information architecture with global change as the pilot project.
- Become a coordinating resource in the High Performance Computing/National Research and Education Network (HPC/NREN) initiative and become a focal point for building a directory of STI resources as part of NREN.
- Increase STI education and training, and promote information literacy.
- Plan a coordinated approach to new international challenges.

During the 1990s, *CENDI* will continue to devote significant energies to inter-agency cooperation through technical meetings, open forums, expansion of working group participation, resource sharing, cross-training, policy review, strategic plans, workshops, and technical presentations. *CENDI* will commit to study the next generation of information systems which will combine text, numeric, and image data in ways transparent to the end user. Finally, *CENDI* will work toward building networks with other agencies serving the science and technology user to optimize the flow of STI to position the United States on the cutting edge of technology.

Credits:

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