22 different agencies and carried out in 31 different organizations is a case in point.

Consequently, it does not seem unreasonable that many agencies with major research programs have, and will continue to develop information systems specifically designed and oriented to their own internal control purposes. Attempts to standardize these different systems or to enforce compatibility among such systems must recognize the *basic fact* that management practices and procedures are *necessarily* different. To standardize the information systems that serve research management, suggests that management practices be standardized to make most effective use of the information furnished. Standardization of research management begins to sound like the standardization of research itself—a wholly untenable suggestion that in itself advises a careful analysis and review of the purposes, the objectives, and the uses of information systems before assuming that they be the same merely because they deal with the same basic stock of scientific and technical data.

Defense Documentation Center (DDC) for Scientific and Technical Information

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DEFENSE DOCUMENTATION CENTER MISSION

ASTIA—the Armed Services Technical Information Agency—has been renamed the Defense Documentation Center for Scientific and Technical Information—DDC. The change signifies greatly increased responsibilities given DDC in Department of Defense (DoD) Instruction 5100.38 dated March 19, 1963, and now being implemented by the Army, Navy, Air Force, and other DoD components. Most important, the change provides an opportunity for a systems approach in the handling of scientific and technical documents in the DoD.

For the nation's 400,000 defense related engineers and scientists, there are five objectives in the new Instruction that are particularly important to them:

1. **Acquisition of all DoD Scientific and Technical Documents by DDC.**—The only limitations involve categories where there is comparatively little scientific and technical information. Under former directives the best ASTIA could claim was to be the principal documentation center of the Department of Defense. It will now be THE Defense Documentation Center with all the meaning the definite article conveys.

2. **Prompt and Well Indexed Announcements of Newly Acquired DoD STI Documents.**—ASTIA has long recognized the need for well indexed announcements but lacked the resources to provide them. Now such indexes are specific requirements. Manpower and an advanced electronic data processing system are being provided which will support these efforts. This will speed decision-making in the selection of documents by engineers and scientists.

3. **Timely Dissemination of Scientific and Technical Documents to the DoD Community.**—The new instruction includes a number of objectives, functions, and authorities which will not only speed the DDC secondary distribution but will ultimately improve primary distribution.

4. **Maintain a Clearing-house, in the Form of an Index of Current Research, Development, Test, and Evaluation (RDT & E) Programs.**—Under the supervision of the Director of Defense Research and Engineering the Agency has already made a start on this service, but the new Instruction emphasizes the task.

5. **Establish a Centralized Directory and Provide Referral Service on Available DoD-Sponsored STI Activities.**—Under the new Instruction, DDC coordinates with DoD Specialized Technical Information Centers as a part of the integrated DoD system.

These are only five of the twenty objectives and functions assigned to the DDC by this new Instruction. They are implemented by a six-page enclosure which details acquisition and security procedures, authorized dissemination of classified and unclassified information, participation of DoD activities, and disposition of classified information disseminated by DDC. Most of these other objectives and functions continue responsibilities which ASTIA was carrying out, such as its Custom Abstract Searches and special dissemination services of its holdings and acquisitions.

Army, Navy, Air Force, and other DoD components have been directed to provide implementing instructions by Dr. Harold Brown, Director of Defense Research and Engineering (DDR & E) of the Department of Defense. The DDC Instruction is based upon a previous DoD Instruction No. 5129.43 issued January 22, 1963, and entitled "Assignment of Functions for the Defense Scientific and Technical Information Program." This first Instruction defined the types of STI functions in the program and established the position of Director of Technical Information on the DDR & E staff. Mr. Walter M. Carlson, a chemical engineer formerly with DuPont, has been appointed to this position. The new DDC

Instruction places management control of DDC under DDR & E and continues operational control with the Department of the Air Force.

Under the first Instruction, functions of the DoD STI Program are generally decentralized to the military departments and other DoD components but under the over-all management of DDR & E, and makes maximum use of existing organizations and activities which are defined in the Instruction. DDR & E is responsible for the establishment of STI centers. The DDC Instruction further implements this authority by providing that each DoD component will arrange for an orderly transfer to the DDC of the document center functions which it operates or supports. The mechanics of this transfer are being studied by DDC and the services. Since literally millions of STI documents, which have been generated in the past quarter century, are involved, this represents a task whose magnitude is not yet fully established.

Both Instructions are based upon Department of Defense Directive 5100.36 issued December 31, 1962, which established the basic policy and concept for handling technical information within the Department of Defense by all DoD components, and established both the DoD Scientific and Technical Information Program and the DoD Technical Logistics Data and Information Program.

All this progress has been in consonance with the report, "Science, Government and Information," which President Kennedy's Science Advisory Committee published in January, 1963, which details the responsibilities of the technical community and of the government in the handling of STI. Functions of central depositories, specialized centers, clearing houses, referral centers, and government focal points are all discussed in this report which will be a basis for action by the President's Federal Council for Science and Technology.

These are the highlights and background of the significant changes. Their application involves the following considerations:

1. **Document Acquisition**—The document is the basic package in which scientific and technical information is wrapped. The first requirement of an STI system is to acquire within the limits of practicability all the documents of value to scientists and engineers within its area of responsibility whether it be mission-oriented, as serving the Department of Defense or NASA's space mission, or subject-oriented such as AEC in nuclear matters, or the Army Plastics Technical Evaluation Center. Unless this comprehensive acquisition can be obtained, no engineer or scientist can be sure that the Documentation Center will have the one document which contains the best information on the subject of his inquiry. ASTIA in the past recognized this problem but lacked both the authority and the enforcement support to attain it. DDC's new Instruction provides both these essentials. The number of exclusions have been reduced 40%. Those that remain are Top Secret, Cryptographic, designated special categories of intelligence, registered documents, or publications and information of foreign governments which they will not authorize for DDC release. Moreover, DDC can now accept Restricted Data, can accept through military channels RDT & E documents of foreign governments, and, except for the excluded categories just listed, may accept any domestic RDT & E technical documents essential to DoD RDT & E programs. Not only are more categories of information available, but more sources have been opened. Subcontractor reports are specifically included as requirements, as are reports from military grantees. The DoD Instruction makes possible the attainment of acquisition saturation. No one knows how many documents this will total, but our best estimates, based upon much checking, indicate an immediate annual increase from the present 50,000 to at least 100,000, and a collection that could be ultimately increasing at the rate of more than a million every three years. With 20 copies of each document being forwarded, the bulk of annual input becomes staggering. The DDC twice-a-month announcement bulletin, "The Technical Abstract Bulletin (TAB)," will have to be repackaged. DDC's new Instruction has teeth in it. The Instruction states that each DoD component will: establish internal procedures and enforce contractual provisions which require that reproducible copies of documents, containing the results of its RDT & E efforts, are provided to the DDC. Thus, the means are provided for DDC to be not *a* DoD center for STI documents, but *the* center.

2. **Timely Dissemination.**—The new DDC Instruction eliminates one built-in delay in the timely dissemination of secret documents. The need-to-know specified by the Military Sponsor for contractors and other authorized civilian agencies is considered sufficient release authority, and the requirement to forward secret reports through a *Via* military office for review is cancelled. Since this delayed documents from two weeks to two months, and sometimes more, this is an important gain. Release limitations which have both restricted and delayed dissemination are more clearly defined in the new Instruction. Limitations are confined to five specific statements and are authorized to be imposed only for one or more of five specific reasons, which must be clearly evident. Most important in attaining timeliness is to start at the point of generation of documents. First, is to actually speed up the initial reporting, preparation, approvals, printing, and initial distribution. As part of its current awareness program, DDC may be able to contribute to this speedup by pre-publication announcement which will in effect establish information of current work being performed in the laboratory or in the operational field efforts.

Equally important is to start at the point of generation with a format and standards which will speed up the cataloging, indexing, and retrieval of a document when it reaches the Documentation Center. The President's Science Advisory Committee concluded that the technical community and the individual author had important responsibilities in promoting information transfer, and that the working engineer or scientist must assume a greater share in the communication of results. Later steps are strongly affected by the attitudes and practices of originators. The promotion of high standards for the preparation of scientific and technical documents is one of the objectives spelled out in the Instruction. This will be facilitated, as will other service relations, by the requirement in the new DDC Instruction that the Army, Navy, Air Force, and Advanced Research Projects Agency (ARPA) each appoint a representative for liaison with

DDC.

3. Vocabulary.—Unless all engineers and scientists talk the same language, the efficient interchange of scientific and technical information, and particularly that based upon machine retrieval, will not be possible. Consequently, DDC is instructed to "maintain and improve a working vocabulary of terms for use in the processing of scientific and technical information throughout the DoD RDT & E effort." ASTIA, working with nearly one hundred organizations from the services, industry, and education, has created a master thesaurus. This is not a static assignment but one continually changing as science and technology progresses and leaves behind the words of outdated achievements and coins new words to describe its latest advancements. The document is the basic package for STI, and its efficient processing is vital to both primary and secondary distribution. Testing, evaluating, and applying developed techniques which are based on studies of user needs have a direct application to the improved distribution of technical documents.

4. Referral Service.—The President's Science Advisory Committee sees the Specialized Information Center as a processing point where raw material in the form of documents is merged with papers from published or open literature in a given subject area. Ideally, these are technical institutes manned by working scientists who analyze and synthesize all available information to produce specific evaluations, state-of-the-art reviews, and out of these studies in some cases to discover new scientific facts and conclusions. DDC has the responsibility of rapidly notifying DoD centers of the availability of STI documents by maintaining profiles of their needs; supplying documents to them; receiving their documents for secondary distribution; maintaining a directory of all these centers and up-to-date information on their subject areas and providing a referral service on their capabilities. A Department of Defense survey indicates that currently DoD supports directly or indirectly about fifty such centers. When DDC receives requests for state-of-the-art information it has the responsibility for referring the request to the attention of the appropriate DoD special technical information center.

5. Interchange.—DDC has the responsibility for effective interchange of scientific and technical documents with other government documentation services and transmitting such documents to the Federal agency designated by law or otherwise responsible for the dissemination of scientific and technical documents to the general public. With foreign governments, DDC is responsible for coordination of techniques with their documentation centers and dealing directly with them on matters of standardizing and improving bibliographic techniques in accordance with established procedures. It may accept their documents through established military channels, announce unclassified RDT & E reports upon which no limitations have been imposed by the originator, and furnish microfilm copies of such reports to foreign governments and international organizations in accordance with instructions from the Assistant Chief of Staff, Intelligence, Hq. USAF, as coordinated with the Departments of the Army and the Navy. This continues the service which ASTIA had been providing and increases the DDC authority in dealing with these agencies to improve information flow.

Contractors, potential contractors, and grantees submit for either unclassified or classified service a DDC Field of Interest Register (FOIR) which must be certified by the sponsoring DoD activity. For classified service, a certification of Facility Clearance also must be furnished DDC. For other agencies of the Executive Branch and/or their contractors, DDC disseminates classified information in accordance with specific instructions issued by the Military Departments or by DDR & E. Normally, classified documents furnished contractors and other civilian agencies are destroyed after serving their purpose in accordance with prescribed regulations. The new DDC Instruction gives the Military Sponsor the right to authorize retention of classified documents by the contractor in some instances.

The Sponsoring DoD Activity is the most important element of the entire flow of STI. Aside from the Cognizant Security Office which certifies a Facility Clearance and is responsible for notifying DDC if classified service is to be suspended or cancelled, the Sponsoring DoD Activity is the one required to notify DoD of contracts, grants, or other actions which will require of affect the service DDC provides. He not only furnishes certification for establishing services with DDC, but is required to keep DDC informed of all changes that affect that certification, and to notify the Cognizant Security Office of any pertinent changes. The Sponsoring DoD Activity also is responsible for the security level and release limitations placed upon documents furnished DDC and any changes therein.

The Sponsoring DoD Activities will be the focal points for enforcement of requirements for standardization of documents; furnishing DDC reproducible copies and the quantity, now 20 copies, DDC requires. They also will be responsible for seeing that the DDC vocabulary is utilized.

Most important is the value to the Sponsoring DoD Activity of making full use of DDC services before authorizing an in-house project, task or program, or before contracting outside. This is the point at which unnecessary duplication can be prevented before any time is lost even considering proposals. The Defense Documentation Center teamed with a Specialized Information Center for a specific subject will provide the means whereby the Sponsoring DoD Activity can request and receive timely information on what has been done, what is being done, and what other engineers and scientists are involved. Most of all it will be timely dissemination—up-to-the-minute, evaluated information to eliminate all but the significant, and provide the responsible engineer or scientist with answers and not a pile of documents, which relevant as they may be, demand more time to assimilate than he has available. This is the service which the Department of Defense Scientific and Technical Information Program has for its goal.

This is a resumé of the new DDC Instruction. It is evident that in these responsibilities there is both a challenge and an opportunity. The challenge is to carry out these responsibilities with minimum resources. The opportunity is to provide very tangible assistance to the nation's defense engineers and scientists in their deadly race to keep our over-all lead in science and technology.