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UNITED STATES INTELLIGENCE BOARD

COMMITTEE ON DOCUMENTATION

25 May 1966

MEMORANDUM FOR: Chairman, Committee on Documentation

SUBJECT: Community On-Line INtelligence System (COINS), Implementation Plan

1. Transmitted herewith is the Implementation Plan for COINS. Drafts of this plan have been extensively reviewed by your Committee as well as by each of the participating Agencies. It is assumed that this plan will be approved since no objections were voiced during the review process and recommended changes have been incorporated in the final version.

2. Therefore, while awaiting final approval of this paper, the COINS Committee will continue the necessary detail planning actions in the following areas: (a) communication engineering specifications; (b) message format and exchange procedures; (c) file specifications and standards; (d) simulation and evaluation procedures. Additional reports will be submitted as planning is completed in each of these areas. This approach is being taken to insure meeting the implementation date of 1 December 1966. However, actual implementation steps such as file preparation, programming, procurement and installation of equipment must await final approval of this plan and will require a five to six month lead time.

3. Implementation of COINS I is not contingent upon the immediate or simultaneous participation of all Agencies. Therefore, the fact that at this time CIA has not selected its files nor defined its user language should not delay approval of this plan for immediate implementation. As soon as this information is provided it will be integrated into the overall system.

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REFERENCES

1. DCID 6/3 Communications Intelligence Regulation, Effective 29 December 1959 [redacted] 25X1

2. Staff for the Community Information Processing Study (SCIPS) Stage I Report I Volume I [redacted] dated October 1963 25X1

3. NSA/C442 "NSA TIPS Reference Manual." dated May 1965 [redacted] 25X1

4. Letter from the White House, dated 15 June 1965, Memorandum for the President, Subject: "U.S. Intelligence Community Capabilities for the Handling of Intelligence Information" [redacted] 25X1

5. Letter from the White House, dated 15 July 1965, Memorandum for the Director of Central Intelligence, Subject: "U.S. Intelligence Community Capabilities for the Handling of Intelligence Information [redacted] 25X1

6. USIB D-39 7/11 dated 24 September 1965, Subject "U.S. Intelligence Community Capabilities for the Handling of Intelligence Information" [redacted] 25X1

7. USIB M-405 dated 7 October 1965, USIB Approval of CODIB Report Contained in Reference 6 [redacted] 25X1

8. DIA/IDHS FFS Retrieval and Output Techniques Volume I dated 15 October 1965 [redacted] 25X1

9. DIA/IDHS FSS Retrieval and Output Techniques, Volume II dated 15 October 1965 [redacted] 25X1

10. "RYE-490 Reference Manual." dated 1965, Published by NSA Office of Training [redacted] 25X1

11. USIB D-39 7/13, dated 5 January 1966, Subject "Committee on Documentation Report of Task Team IV (Installations). [redacted] 25X1

12. CODIB Task Team V - Biographics, Subject FINAL REPORT, dated 1 February 1966

13. JCS 222/935. Paper dated 14 March 1966, Subject: "Expansion of Washington Area High Speed Facsimile System"

14. DIA Draft Working Paper on ISIC Query Language No date [redacted] 25X1

IMPLEMENTATION PLAN FOR COINS I

I

GENERAL

1. PURPOSE

The purpose of this paper is to provide the management of each of the participating Agencies with the detailed information necessary to make a judgement with respect to the implementation of COINS I. A detailed examination of this paper will indicate that the: (a) linking together of selected computer systems is technically feasible by 1 December 1966, and (b) total cost of implementing the initial system is estimated to be in [redacted] 25X1 25X1 Final coordination of this paper by Chiefs of the participating Agencies will constitute a commitment on the part of those Agencies to provide the resources necessary to implement COINS I by the aforementioned date subject to the constraints listed in Section V, para 1b.

2. AUTHORITY AND DIRECTION

This plan was prepared in response to the White House Memorandum, dated 15 July 1965 (See Reference 5). Specifically, this letter directed that Recommendation No. 2 in Reference 4 be implemented. Following is extract of this recommendation:

> "Recommendation No. 2: That the Technical Information Processing System (TIPS) project, now underway within the National Security Agency, be expanded to include participation by other member Agencies of the Intelligence Community in an experimental operating system constituting a first step toward inter-agency (and inter-building) information handling. Since results should be sought from the experiment as promptly as feasible, the participation of other Agencies should be achieved by September of 1965; the capability for extensive handling [redacted] problem should be available in the community-wide system by the summer of 1966; and by the summer of 1967 if should be possible to exchange outputs from various mechanized sources in the fashion pioneered by the TIPS project. 25X1 25X1
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> (Only through such experimental operational trials can the Intelligence Community come to grips with the wide variety of program problems involved, including those of security compartmentation, the encryption of communications between the computer/information base and the user locations, and

other problems.) In order to make such a trial effective, it may be necessary to expand the scope of the information maintained in the TIPS system and, if so, this should be done with caution as to the total amount of material thus added. The intention should be to establish a system that will, in fact, be used by workers in at least a few Agencies as a better way to meet day-to-day tasks; however, the system should be regarded as experimental and there should be no attempt to insure that in its experimental form its operation can be economically justified."

3. COINS COMMITTEE

a. The Community On-Line INtelligence System (COINS) Committee was established in September 1965, under the auspices of the Committee on Documentation, United States Intelligence Board (CODIB). The Committee was charged with the responsibility of developing the plan to implement Recommendation No. 2 in Reference 4. The membership of this Committee is as follows:

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* Chairman
** Secretary

b. Acknowledgement

Following by organization is a list of the many people to whom the members of the COINS Committee are indebted for considerable technical assistance and advice they have provided during the preparation of this paper. The members of the COINS Committee however accept sole responsibility for the contents of this paper.

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4. WHAT IS TIPS AT NSA?

a. NSA management became increasingly aware of the mounting volumes of technical information (i.e., information with respect to SIGINT targets and resources) within the SIGINT Community as well as the inadequacies of existing methods for storage, correlation and retrieval of this information. In 1963, it was decided that there was an urgent need for a radical approach in this area, taking maximum advantage of existing automatic data processing technology. As a result, NSA has been engaged, for the past three years in planning, developing and implementing of the Technical Information Processing System (TIPS) in a concerted effort to improve the assembling, processing and retrieving of formatted technical information. This project is being accomplished in three phases, namely, TIPS "PILOT", TIPS I and TIPS II. The first two phases are being accomplished in-house; the latter phase, however, is under study by various components of the NSA/R&D organizations with some contractual assistance.

(1) TIPS "PILOT" - This is an experimental retrieval system now entering its final stages of implementation using the available UNIVAC 490 remote access system (RYE). The existence and availability of the RYE system is one of the key contributing factors which has permitted the successful implementation of TIPS "PILOT". This system calls for the centralization of a selected set of thirteen formatted files, containing approximately 38 million characters which are representative of the types of files to be accomodated in future generations of TIPS. Information contained in these files is of interest only to members of the cryptologic community. The pilot system is designed to meet a limited number of operational requirements, and therefore it is available 24-hours per day, seven days a week. The main objective is to enable NSA technicians to learn and gain operational experience in designing, developing, organizing, programming and utilizing an on-line near real time information retrieval system. Some of the more provocative questions which need to be answered are: Is such a system required and is it worth the cost? Will the NSA organizations use the system? Will the files be updated more frequently than before? UNCODED

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A detailed description of TIPS "PILOT" and RYE can be made available by NSA to any authorized organization providing they have the proper security clearances (i.e., SECRET SI).

(2) TIPS I (July 66 - Dec 67)

(a) Plans and studies are now underway for the initial expansion and refinement of TIPS "PILOT" to be known as TIPS I. It is evident that the existing RYE complex cannot handle the anticipated work load resulting from TIPS I. Therefore, implementation of TIPS I

will not begin until after the upgrading of the current RYE system has been completed, which is tentatively scheduled for the second quarter of FY67 (i.e., Oct - Nov 66). This interim period will be used to accomplish the necessary detailed system planning for implementation of TIPS on the RYE system. It is estimated that the implementation of TIPS I will require approximately 150 man years of effort spread out over 12 - 18 months.

(b) A generalized file maintenance program and a users language with a report format generator will be included in the system's software for TIPS I. Inclusion of this software will make the system more flexible and responsive to the constantly shifting information display requirements of the users. This action will reduce but not eliminate the need for open-shop programmers in TIPS I.

(c) The following tentative estimates are provided for TIPS I:

(1) Files currently contained in TIPS "PILOT" combined with those selected for TIPS I will contain approximately 160 - 200 million characters and be divided into roughly 60 - 70 different files.

(2) There will be approximately 15,000 to 20,000 inputs per day with the majority of them occurring during the normal duty hours, Monday thru Friday.

(3) The system will be designed to (a) provide an average response time of 15 minutes for short term interrogations and (b) handle all procedural requests within the system on a 24-hour turn around basis.

(4) There may be approximately 150 - 175 remote stations involved, some of which may be located at the Service Headquarters (i.e., ASA, AFSS and NSG), as well as other Z.I. locations. Some of these remote stations may be equipped with visual display devices.

(3) TIPS II (TIPTOES) (Jan 68 - Dec 69) - This is a third generation of TIPS and is currently under study by various components of the NSA R/D organizations with contractual assistance. The data base for this system will contain approximately 500 million characters with required response time of less than five minutes for short term interrogations. This system will require the development of basically new approaches in file organization and search strategies coupled with technological advances in computer hardware. In addition, it is envisioned that major overseas sites will be capable of directly interrogating and receiving answers from the system independent of human intervention.

b. The long range objectives of TIPS are to:

(1) Establish a complete mechanized data base with respect to SIGINT targets and resources which is routinely updated in a timely fashion and which provides NSA technicians and managers at all organizational levels with current and accurate information.

(2) Provide the basis for the eventual implementation of the SIGINT Command and Control Complex (SCCC) in FY70 - FY71. The implementation of this concept is dependent upon the successful establishment and maintenance of the mechanized data base described above. The SCCC must have, in addition, two characteristics which TIPS will not provide. Using the TIPS data base, it must:

(a) Automatically assess incoming information and alert the appropriate organization of an abnormal situation or, in routine situations, automatically make decisions leading to appropriate actions;

(b) Provide answers to interrogations which indicate possible alternatives for action, and give them some weighting according to general criteria so that optimum actions are easy to select.

5. CONCEPT

a. In accordance with the White House letters, subject "U.S. Intelligence Community Capability for the Handling of Intelligence Information" dated 15 June and 15 July respectively, a secure network of remote information retrieval computer systems is being planned within the USIB Community, i.e., NSA, DIA, STATE and CIA (i.e., Information Processing Division of the Interpretation Center - NPIC) and the CIA Computer Center. The title being used for this project is Community On-line INtelligence System (COINS).

b. Using COINS, each participating Agency will be able to remotely interrogate its own file(s) as well as selected files of the other participating Agencies. This concept calls for each Agency to maintain its files in its own remote information retrieval computer system and for the computer system of each Agency to communicate with one another via secure data links. This approach eliminates the necessity for one Agency to serve as the central repository for the entire Intelligence Community. Instead, each Agency will concentrate on establishing and maintaining those files for which it is responsible or best suited.

c. This system is not designed to solve all of the inter-agency problems in the Intelligence Community with respect to information retrieval or information exchange. Specifically, COINS is aimed at formatted files, as opposed to scanning and selecting desired portions of narrative text files. Formatted indices to narrative text files, biographic dossiers, finished intelligence files, micro-film or video-film images or documents may be retrieved through COINS. For example, if an interrogation of COINS reveals that the desired biographic dossier or peice of finished intelligence exists in the files of another Agency, the secure high speed facsimile system (network) planned for the Washington D. C. area could be utilized for the inter-agency transmission of the desired report or dossier. (See Reference 13). Although some files may contain narrative text the desired information will be extracted based on a formatted or key field.

6. ULTIMATE OBJECTIVES

a. Reduce the duplication of effort by eliminating the necessity for maintaining and supporting a multiplicity of EDP programs and formatted files of similar content by direct inter-agency computer communication.

b. Improve the community's capability to exploit the ever-increasing volume of intelligence by improving timeliness in the processing, maintenance and distribution of finished, semi-finished, and key intelligence information.

c. Provide a high degree of flexibility in managing, selecting, collating and distributing intelligence information.

d. Improve the opportunity for the effective utilization of finished, semi-finished and key intelligence information by making it readily accessible to technicians at various consumer and intelligence producing Agencies in a useful time frame.

e. Establish a basis for designing and constructing a more sophisticated, dynamic intelligence network in the future.

f. Provide for more effective and efficient utilization of equipment, manpower and time.

g. Develop the security requirements and controls necessary for dynamic intelligence information exchange.

7. APPROACH

This concept will be implemented in two phases, namely:

a. COINS I (Dec 66 - Jun 67)

(1) In general, this plan calls for the use of existing computer systems or an upgraded version of existing systems at NSA, CIA, NPIC and DIA. The State Department will participate as a consumer in this phase by having a remote station tied into the DIA computer system. The primary objective of the pilot phase will be to gain some experience with respect to the technical problems associated with establishing, using and maintaining a secure network of remote access computer systems within the intelligence community. A parallel objective is to improve the interchange of information within the Intelligence Community.

(2) Although unsophisticated and primarily designed to determine feasibility, COINS I is an important and necessary first step toward the development of a larger and more complex community-wide system in the future. Implementation of COINS I is a challenge to the U.S. Intelligence Community for it will necessitate very close cooperation among all participating Agencies. If these Agencies cannot work together to implement a simple, straightforward system such as COINS I, then it certainly will not be possible to implement more sophisticated community-wide systems in the future.

b. COINS II (FY-68)

Plans with respect to this phase will be influenced by each Agency's internal experience (a) in implementing COINS I, and (b) developing their own on-line analyst support systems. As a basic minimum COINS II will require a self-scheduling remote access computer system

at each Agency linked through a CIA installed and staffed communications store and forward switch. The network will develop a common interrogation and communication language.

8. SECURITY

a. Prime Factor

Security is a prime factor of consideration in establishing COINS.

(1) Initially, in COINS I all computer complexes, remote stations and communications will be protected to TOP SECRET SI. This approach will avoid the multi-level classification problem. Any installation may operate a computer complex with multi-level classification or multi-level outstations providing such use has been approved in accordance with Reference 1.

(2) However, COINS II must be capable of handling the multi-level classification problem. In this phase, a computer and its remote outstations will have to be located in a secure area consistent with the highest classification of information it is authorized to receive from the system.

b. Responsibilities in COINS I

Each Agency is responsible for its own internal security. Specifically, it must insure that software and hardware built into its computer system afford the degree of security required. For example, each Agency is responsible for insuring that:

(1) Files are not accessed by unauthorized external organizations, either for the purpose of interrogation or file maintenance.

(2) Responses are delivered to the appropriate remote station consistent with security requirements.

(3) The classification of all information introduced into the inter-Agency computer net is no higher than TOP SECRET SI.

9. RESTRICTION

Participation in COINS I will be restricted to the Agencies indicated to insure adherence to the implementation schedule. The participation of additional organizations during this period would only present more problems and perhaps delay implementation.

10. RECOMMENDATIONS

a. A series of specialized working groups should be established under CODIB to develop data standards for the United States Intelligence Community. These working groups should cover such areas as (1) personalities - biographies (2) order-of-battle (3) installations (4) geographic, etc. Wherever possible the charters of existing CODIB Working Groups should be expanded to include this function. (Reference Chapter III para 3 and Chapter V para 3).

b. Immediate steps should be taken to officially notify appropriate organizations (i.e., DOD, STATE, CIA, NSA, etc.) that CODIB will be the organization for:

(1) Developing data standards for intelligence activities for Agencies which are members of USIB.

(2) Coordinating data standardization efforts within the United States Intelligence Community with the Bureau of the Budget.

c. Agencies participating in COINS I develop the specification for a common, computer independent users language for use throughout the Intelligence Community in COINS II for remote interrogation and file maintenance. These specifications to be based on the operational experience gained in COINS I.

II
FILES

1. GENERAL

According to Recommendation No. 2 of Reference 4, initial efforts of the Intelligence Community were to be directed towards the [redacted] problem. Therefore, as indicated in paragraph 2 below, a number of machineable, [redacted] files have been included in COINS I. However, two important factors have limited this approach: 25X1 25X1

a. As indicated in Reference 6, the majority of the biographic files are not in a machineable format. This fact is further substantiated in CODIB TASK TEAM V Final Report on Biographics. (See Reference 12).

b. The kinds of files in any such system must be diversified since not all organizations are interested in the same kinds of information. For example, the interest of State and NPIC differ widely.

2. FILES FOR COINS I

The number and types of files to be included initially in COINS I is not particularly important, since the principal objective at the outset is to implement the system and work out the technical problems. Once the system is in operation, the number and variety of files can be expected to increase rapidly. The files which each Agency has decided to make available to the Intelligence Community through COINS I are listed below. Detailed descriptions of these files have not been included in order to hold down the classification level of this report.

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b. CIA

(1) NPIC - Target Brief File (This is a restricted sub-set of total file)

(2) CIA Computer Center - Files to be nominated at a later date.

c. DIA

(1) Air Order-of-Battle

(2) Missile Order-of-Battle

(3) Radar Order-of-Battle

(4) Air Defense Order-of-Battle

(5) Military Personalities

(6) Viet Nam Activity File (Only the most recent 30 days)

3. CATEGORIES OF FILES

a. There are two general categories of files which may be found in each Agency's system:

(1) Those files which are available for use by other members of the Intelligence Community.

(2) Those files which are not available for use by other members of the Intelligence Community. Each Agency is responsible for building the necessary safeguards into their own computer system to prevent unauthorized access to these files by other Agencies. For example, in TIPS at NSA there are a large number of files which are reserved only for internal use of the cryptologic community. These files will not be made available to COINS.

b. DIA has indicated that all of the files in the ISIC/IBM 1410 on-line system will be available for interrogation by other COINS members.

4. DATA ELEMENT STANDARDIZATION

a. As soon as this plan is approved appropriate steps will be taken by the Committee to establish standards for the files in COINS insofar as it is practicable. However, it must be recognized that it may not always be feasible to achieve complete standardization for all data elements for all Agencies in the Intelligence Community. For example, an Agency may have already adopted certain standards for its internal operations and to alter them would require extensive changes in: (1) file formats and contents, (2) computer programs, (3) input/output formats, (4) directives and procedures, and (5) training courses.

b. The following rules have been established with respect to data element standardization in COINS.

(1) Whenever standardization cannot be achieved, translation tables will be constructed to translate between standard and non-standard data elements. In this event the requesting Agency is responsible for (a) translating outgoing data elements of interrogations into the terms of the receiving Agency and (b) for translating incoming data elements in the response into their terms.

(2) Standards adopted for the files in COINS will not be binding on the other machine files of each Agency which are not part of COINS. However, these data standards will be forwarded to CODIB for final coordination throughout the Intelligence Community.

(3) Each Agency will be responsible for correcting and maintaining the information in their files in accordance with mutually agreed upon standards.

(4) Standard data elements approved by USIB and adopted by the Intelligence Community will be used wherever such exists. (See Reference 11).

c. There is an urgent need for the standardization of data elements within the U. S. Intelligence Community and such standardization efforts should be accomplished by a working group under USIB (or under CODIB) with representation from each member Agency. This working group in turn should be responsible for coordinating the Intelligence Community requirement with the Bureau of the Budget which is charged with developing these standards for the entire U. S. Government.

d. Geographic information in some form or another appears to be a common thread running through all files. As a result, some geographic standards are also needed in the U. S. Intelligence Community, e. g., coordinate representation, urban area code, geographic sub-division, etc.

5. FILE ORGANIZATION AND FORMATTING

Each Agency is responsible for:

a. Organizing and formatting its own files.

b. Keeping other Agencies informed of any significant changes in file format, accuracy or content. In this instance, content does not refer to all routine file maintenance changes, but rather to expansion of new categories of information within the file

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c. Converting the data elements in its file to the accepted standards.

6. FILE MAINTENANCE

The system will not permit an Agency to update the information in the files of another Agency (i.e., NSA cannot update or modify information contained in the DIA files, and vice versa) unless duly authorized on each file affected.

7. PROBLEM OF DUPLICATE INFORMATION IN COINS

a. Goal

One of the major goals of this system is to reduce the necessity

of maintaining duplicate banks of information. It is doubtful that complete elimination of duplicate information banks can be achieved at this time. Duplication may be required for economic reasons. The trade-off between maintenance of duplicate files and the servicing of requests by the individual Agency against its copy of a file as opposed to the establishment of a single copy of a file and the servicing by one Agency of all requests against that file is not obvious at this time. The relative efficiency of centralization depends on the relationship between maintenance, input volumes, query rates and communication costs. These will vary from file to file, and a goal of the COINS I is to identify when and for which files duplication may be desirable. An additional complexity arises from the essentially unpredictable requirements for query of files. It is possible that the servicing of one Agency's requests on another Agency's system may swamp that system. The integrated planning of systems which must meet requirements from all Agencies will require experience and greatly increased cooperation.

b. Types of Duplication

(1) File - All or part of a file may be duplicated. For example:

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(c) In some instances a machine file of one Agency may contain records derived from many different sources. For example, Agency A may enter order-of-battle information derived from the reports of Agency B. When Agency B interrogates Agency A's order-of-battle file, how does it know that information received is not that which it originated? There is a danger that Agency B may treat the answer derived from Agency A's file as confirmation when, in reality, it is receiving its own information. On the other hand, an Agency's file may contain conclusions based on information which has been derived from sensitive compartmented activities not available to the analysts in another Agency, or from information not exploited by another Agency. However, if the file represents the Agency's finished intelligence there may be honest differences of opinion. A goal of COINS I will be to identify those areas where division of responsibility in the establishment and maintenance of files is practical and economical.

(2) Elements of Information Within a File - Various elements of information within a record of a particular file may come from different sources. For instance, Agency A has a military personality file. Though the name and location of a particular individual carried in one of the records was derived by Agency A, his rank and organization were derived by Agency B. How does an analyst know which elements of the record were derived by Agency A and which were from Agency B? Again there is a

danger that an analyst might consider the rank and organization in Agency B's file as confirmation of the information in Agency A's file. It is therefore desirable that a file include the source (i.e., Agency or report title) date entered and validity of information contained in the file.

III

INTERROGATION PROCEDURE

1. OBJECTIVE

The principal objective of COINS is to improve the interchange of information between intelligence Agencies by permitting remote consoles in any participating Agency to interrogate the selected files of other Agencies via a secure computer-to-computer link.

2. RESPONSE TIME REQUIRED

A design goal of COINS I is to provide a fifteen minute response to all interrogations. This system is not designed to provide users with either an instant response or with the capability to browse through a file on-line. A fifteen minute delay for answers to interrogations is a reasonable delay which is acceptable to all participating Agencies for COINS I.

3. EXPECTED VOLUMES

It is impossible even to estimate the number of inter-agency interrogations per day that COINS I must accommodate. In fact, one of the early objectives of COINS I will be to determine the amount of inter-agency activity desired. It is safe to assume however, that the majority of interrogations will occur during the day shift of normal work days. As soon as COINS I becomes operational the volume of inter-agency interrogations can be expected to rise markedly as; (a) the number and variety of files are increased, (b) the number of remote consoles in each Agency are increased and (c) the users in each Agency become familiar with the system particularly with its capabilities and limitations.

4. INTERROGATION PRIORITIES

Each Agency has its own system of interrogation priorities and, as indicated below, there is not always a one-for-one correspondence.

a. Whenever DIA or State is interrogating an NSA or NPIC file they will use the common priority system employed by these Agencies. Table I illustrates the relative ranking of these two priority systems.

b. Whenever users in NSA or NPIC are interrogating the files of DIA they will use their own interrogation priority system. The NSA RYE/TIPS or NPIC system will examine the priority applied by the NSA or NPIC user and automatically translate it to the appropriate DIA priority and insert the appropriate priority lock according to conversion Table II.

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TABLE I

INTERROGATION PRIORITY CONVERSION TABLE

STATE/DIA TO NSA/NPIC

DIA PRIORITIES	NSA/NPIC PRIORITIES
R (ROUTINE)	2
P (PRIORITY)	4
U (URGENT)	5

TABLE II

INTERROGATION PRIORITY CONVERSION TABLE

NPIC/NSA TO DIA

NSA/NPIC PRIORITIES	DIA PRIORITIES - PRIORITY LOCKS*	
BLANK, ∅, 1, 2	R (ROUTINE)	??
3-4	P (PRIORITY)	??
5	U (URGENT)	??

*Fixed Priority locks will be determined upon approval of this plan.

5. SCOPE OF INTERROGATIONS

a. The most elementary information retrieval system conceived would permit remote consoles in one Agency to interrogate (or look up information) in another Agency's file. However, in such an elementary stage there may be no provision for melding together into a composite answer information obtained from several different files. Adoption of this simple approach negates, to a large extent, the need for standardization of data elements since the information is not to be merged for machine processing.

(1) This approach simply automates the situation which exists today where each Agency periodically receives the reports published by other Agencies. Then analysts search through and cross-reference these reports manually in an effort to find the desired information. This is a laborious and time-consuming process. Generally, these reports go through a publication and distribution process and as a result the information contained in them is quite old.

(2) Even so, there are some advantages to be gained in adopting this procedure, particularly in the early development stages of COINS when all organizations are learning.

(a) Information obtained from interrogating files in such a system would be more current than that contained in a hard copy machine listing or report, since such reports have generally gone through a publication and distribution process. Such a system would not eliminate the need for publishing or distributing hard-copy reports immediately, but it should eventually reduce the number of copies desired and perhaps the frequency of publication.

(b) Only the actual information specified in the interrogations would be received.

(c) This approach eliminates the necessity of searching large, bulky, and out-of-date machine listings manually, though the answers derived from interrogating several files independently would still have to be melded together manually in the same fashion as they are today.

(d) This approach eliminates the necessity for standardizing data elements and items, a subject which is quite parochial in some Agencies.

b. A more advanced information retrieval system, the goal for COINS II, would permit one Agency to interrogate all of the appropriate files in COINS with one interrogation. The individual answers received from such a multi-file interrogation would be melded together, processed and formatted before being printed out at the appropriate remote console. This approach has all of the advantages of the elementary system, but eliminates the need for manually cross-referencing the answers received from several unique interrogations. However, this approach necessitates:

(1) Standardization of data elements

(2) Adoption of acceptable translations tables when data elements cannot be standardized.

6. INTERROGATION STRATEGY

a. The method of processing incoming interrogations including the search method employed by each Agency may be different as it is dependent to a large extent on the configuration of hardware and software available at each Agency.

b. There are basically two distinct types of interrogation strategies, file-oriented interrogations and subject-oriented interrogations. Each appears to have its own set of advantages and disadvantages and both should eventually be provided for in COINS.

(1) File-Oriented Interrogations

This is the interrogation strategy that will be employed in COINS I. The user or analyst making the interrogation must have knowledge of the file or files being interrogated. This requires the exchange of much data between Agencies as well as considerable study on the part of the users. The user must know the:

(a) Name of the file(s) being interrogated

(b) Name of the field(s) in the file(s) being interrogated

(c) Data elements (i.e., how the information is recorded) in the file being interrogated.

(2) Subject-Oriented Interrogations

This type of interrogation is one of the goals for COINS II. In this situation the user does not have to know anything about the file(s) which must be interrogated (or searched) to derive the desired answer. Simply stated, he merely indicates the subject on which information is desired and leaves it up to the system to find the necessary information. It is fully recognized that the system itself must contain and respond to all the rules and discipline of file orientation. When using this type interrogation, the user must provide as much amplifying information as possible with respect to the elements of search (i.e., data items) to narrow down the number of files to be searched. For example, if an analyst were to submit an interrogation for information on the "3rd Infantry Regiment", it would be necessary to specify the nationality. Otherwise, the system would search all files in the system having information on military organizations.

7. ASSUMPTIONS

It is assumed that:

a. Each member Agency will have detailed knowledge of the COINS files of the other Agencies, particularly with respect to file names, field names, content data elements, etc.

b. Some standards will be established with respect to file names, field names and data elements. This is essential if information is to be extracted from the files of more than one Agency and merged in subsequent processing.

c. Each member Agency will keep other using Agencies informed of any significant changes in file format, content or accuracy.

8. TYPE OF INTERROGATION

There are two distinct types of interrogations which must be accommodated in the system, specific (canned) interrogations and interrogations making use of an inquiry language. Each type of interrogation has its own set of advantages and disadvantages (See Table III).

9. SPECIFIC (CANNED) INTERROGATIONS

a. The named interrogation program contains and specifies the:

(1) File(s) to be searched.

(2) Field(s) within these file(s) to be searched.

(3) Processing (i.e., mergining or summarization) to be performed on the desired records extracted and

(4) Output format.

b. The answers (or results) to specific interrogations will be automatically forwarded to the computer system of the requesting Agency for:

(1) Output through its own remote system

(2) Input to another program for subsequent processing (i.e., merging with information received from another program, reformatting, etc.)

c. Each Agency will make available to the community, information relative to its existing "specific (canned) interrogation programs" for those files which are to be included in COINS. If an existing specific interrogation program does not satisfy the needs of another Agency, the following options will be made available to the requesting Agency:

(1) Write a specific interrogation program for inclusion in the program library of the retrieval system of the Agency having the desired file(s). The program must be written in accordance with the procedures and conventions established for that system. For example,

TABLE III
ADVANTAGES AND DISADVANTAGES OF DIFFERENT
INTERROGATION TECHNIQUES

INTERROGATION	ADVANTAGES	DISADVANTAGES
1. Specific or "Canned" Interrogation Programs	a. Users do not need to be trained in the use of a retrieval language for a complex input-interrogation format. b. The use of short interrogation statement reduces the number of: (1) Key strokes required by the users. (2) Error-likely situation that might occur when the users are required to type in a long, rigidly formatted interrogation statement.	a. Means a separate program must be written for each interrogation but the amount of original programming required will be reduced through the use of common sub-routines. b. Restricts the users to a canned set of question & answers. Therefore, to obtain the desired info the user may have to: (1) Ask more than one canned question (2) Write a new program. The writing of a new program will require time; how long will partly depend on how much prior coding from other interrogation sub-routines can be incorporated in the new interrogation program.
2. Interrogation Language	a. Permits a user to formulate & enter immediately interrogations which have not been pre-programmed. This is particularly useful if time is critical. b. Eliminates the necessity of writing a separate program each time a new combination of info is required by the users.	a. Means that a retrieval language must be developed which is common to all files in the system, and all interrogation & file maintenance inputs. b. A compiler must be developed & written to translate each interrogation into a program. This requires a large number of systems programmers who are not currently available. c. Users are required to be trained in the use of a retrieval language and a complex input-interrogation format.

SECRET

SECRET

NSA might have to write a specific interrogation program for inclusion in the DIA/IBM 1410 system, and conversely, DIA might have to write a specific interrogation program for inclusion in NSA-TIPS. This means that DIA would require a limited number of RYE/TIPS programmers and NSA would require some IBM 1410 ISIC programmers. In October 1965, arrangements were made for [redacted] to join the UNIVAC 490 class at NSA. 25X1

(2) Write a specific program for their own system to merge and/or reformat the results (answers) received from other computer systems. When the desired results (answers) are not produced from the data as received from other computer systems, they might be obtained by reformatting the data or by combining all or parts of data from two or more specific interrogation programs. For example:

(a) An analyst at DIA can enter a specific interrogation called "ABLE" from his remote console.

(b) The DIA computer will recognize that in order to answer this interrogation, it must in turn automatically initiate two specific interrogations available in the NSA computer called "BAKER" and "CHARLIE."

(c) When the results of these two interrogations are received, the DIA computer will merge and/or reformat the results and output them to the requesting remote console. When this technique is used, the DIA analyst does not have to know the names of the specific programs in the NSA system, but the DIA computer must have this information.

(3) It should be noted that the DIA analyst could have requested the results of NSA's specific interrogation programs by merely inserting BAKER and CHARLIE. However, it would have required two separate interrogations and the results would not have been combined.

10. USER'S LANGUAGE

a. General

(1) Currently the "users language" in each system is different, and, in each case, is dependent upon the sophistication of the software, as well as the size of the individual computer complex.

(2) The long-range objective is to develop a computer-independent user's language for the Intelligence Community. The two languages used in COINS I will provide the experience necessary for establishing the specifications for this language.

(3) Analysts using this language will be able to extract the desired records from the appropriate file or files in the systems of other Agencies, after which these records can be either:

(a) Forwarded in their complete form to the requesting Agency.

(b) Summarized in some prescribed fashion, in which case the summarized results will be forwarded to the requesting Agency.

(4) Upon receipt of these results (i.e., either the set of complete records or a summarized version), the computer of the requesting Agency can:

(a) Transmit the results to the appropriate remote station(s) in its complex.

(b) Use the results as input to another program for further processing (e.g., merging with information received from the files in the systems of other Agencies, further summarization or formatting.)

b. Levels of Sophistication

For the purpose of this paper only, two levels of sophistication have been identified within the users language, and each level is defined below:

(1) Level I - Users can specify the (a) file(s) to be searched (b) field(s) to be searched in the specified files and (c) elements of information to be searched for in the fields specified. Entire records meeting this criteria will be extracted from the file(s) indicated and forwarded to the requesting Agency for further processing (e.g., merging, sorting, summarizing and formatting). Selection of records is based on "IF, OR and AND" relationships.

(2) Level II - Users can specify:

(a) The file(s) to be searched by name.

(b) The field(s) to be searched by name.

(c) The elements of information to be searched for in the specified field. In addition, the user can qualify his interrogation using the full range of Boolean expressions (e.g., and, or, if and only if). Further, the user can specify the processing to be performed on the extracted records (e.g., merging, sorting, summarizing and formatting) before they are transmitted to the requesting Agency.

c. COINS I Approach

For the purpose of COINS I, only the specific (or canned) interrogation and Level I of the users language will be used.

d. COINS II

In this phase provisions will be made to add interrogation levels and a standard query exchange language.

IV
COMMUNICATIONS

1. COMMUNICATIONS SWITCH

Implementation of COINS requires the establishment of a dedicated, secure communications network to permit direct, on-line, linkage of the various remote access computer systems and remote stations in the Intelligence Community.

a. DIA will act as the communications switch in COINS I. (See net diagram in Appendix I). In addition, DIA has agreed to:

(1) Procure and install the communications and crypto-equipment necessary to operate the communications switch.

(2) Rent the data links required for computer-to-computer communications between: (a) DIA and NSA (b) DIA and NPIC and (c) DIA and CIA. Actually, DIA will pay for the communications lines up to the NSA, CIA and NPIC buildings.

b. NSA/T1 will provide the communications engineering guidance and assistance to DIA for the communications switch in COINS I.

c. CIA will be the communications store and forward switch in COINS II. (See net diagram in Appendix II). This phase will start in FY-68 with the installation and checkout of time sharing equipment for both the communications switch and a further update of the remote access computer system at CIA. The store and forward switch in addition to its normal communicative mission will be responsible for:

(1) Secondary security checking.

(2) Service and equipment advisories and message on line and equipment status for all directly interfaced equipment (i.e., non-availability of service due to maintenance).

(3) Provide message receiving and error checking and recovery software procedures.

(4) System accounting and message servicing as determined to be necessary for smooth and efficient operation of the system.

(5) Limited conversion routines that may be necessary to provide linkage of non-homogenious computer and equipment.

2. POINTS OF AGREEMENT, COMMUNICATIONS

a. Transmission Rate - Initially the transmission rate will be 2400 bits per second (BPS) with a gradual increase to 9600 BPS in COINS II. However, it should be noted that the HN9 is currently designed to handle a maximum of 4800 BPS and therefore a modification of the HN9 will be necessary to meet the 9600 BPS requirement.

b. Security

(1) COINS I

(a) All transmission will be protected to TOP SECRET SI.

(b) All computer complexes including all remote stations will be located in an area protected to TOP SECRET SI.

(c) If any computer is to have multi-level files or remote stations specific approval for such use will be obtained in accordance with DCID 613. (See Reference 1).

(2) COINS II

A multi-level all source communications and terminal system will be developed for this phase.

c. Standard Communications Code (ASCII) - The American Standard Code for Information Interchange (ASCII) will be used for transmitting data between the various remote access computer systems.

d. Length-of-Message - Messages exchanged between computers will always be transmitted in blocks of 150 characters. A message to consist of the necessary contiguous multiple blocks. If a message is shorter than 150 characters or if the last block is less than 150 characters, it will be padded out to 150 characters using a space (i.e., octal $\emptyset 5\emptyset$) as the padding character.

e. Message Transmission - Messages will be transmitted every 15 seconds until a receipt is received from the receiving Agency's computer or for a reasonable length of time.

f. Time of Operation - The computers will be linked together and available for remote interrogation 24-hours per day, seven-days a week.

g. Error Detection and Correction

(1) The odd parity check-bit will be used in the eight level ASCII code and it should provide sufficient error detection for the initial phase of COINS I. Therefore, EDC equipment will not be required initially for the data links, but may be procured at a later time if operating experience warrants.

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(2) This is a problem which will be the subject of continuing discussions until it is resolved. For DIA to meet the implementation date of 1 December 1966, a decision in this area is required by 1 June 1966.

h. Transmission of Files - Total files will not be transmitted between systems as this would defeat the purpose and objective of this effort. In the case of NSA, a maximum of 1024, 320-character records will be forwarded per single interrogation. Similar restrictions will probably be imposed by DIA and CIA.

i. Communications and Cryptographic Equipment - Each of the participating Agencies will be expected to pay for its own communication and crypto-equipment, including the necessary spares. NSA and NPIC will provide a communication line terminal (CLT) in their multiplexer to receive the DIA data link.

j. Type of Subscribers - There will be two types of subscribers in COINS:

(1) Users who do not have machine files or computer systems, but who require remote access to the information in COINS. This type of user only requires a remote station and merely interrogates and receives answers from the system. The National Indication Center (NIC) is an excellent example of this type of user. The State Department link is an example of this type of operation in COINS I. For this type of subscriber, the communication switch will serve as the requesting computer.

(2) Organizations who desire to enter the COINS network and have files in a computerized information retrieval system.

3. MESSAGES

a. Type of Messages

(1) Following are the types of messages that will be exchanged in COINS:

(a) Requests (interrogation or query)

(b) Receipts

(c) Responses

1 Answers to interrogations including negative answers

2 Messages indicating the files are not available for interrogation or that a specific interrogation is not authorized.

(d) Service Messages

(2) Examples of various types of messages are contained in the four displays included in Appendix III:

(a) STATE/DIA interrogation cycle of NSA files using:

(1) Specific (or "canned") interrogations (Appendix IIIA)

(2) Users Language - Level I (Appendix IIIB)

(b) NPIC/NSA interrogation cycle of DIA files using:

(1) Specific or ("canned") interrogations (Appendix IIIC)

(2) Users Language - Level I (Appendix IIID)

b. Message Formats

(1) All messages exchanged in the system will be in a format acceptable to the computer system of the receiving Agency. As a result, the receiving Agency can treat incoming interrogation messages from another Agency's system in the same manner as if the interrogation had originated at one of its own remote stations. This means that the originating Agency must either:

(a) Require its users to submit interrogations in the exact format of the receiving Agency, thus eliminating the need for computer reformatting. (This is the approach being used by DIA).

(b) Write a computer program to translate and format the outgoing interrogation into a form acceptable to the receiving Agency. (This is the approach being used by NSA and NPIC).

(2) The four displays included in Appendix IIIA thru IIID depect at a glance the:

(a) Sequential flow of messages between NSA and DIA

(b) Format and content of these messages at each stage in the sequential flow

(3) These displays are intended to provide sufficient details to permit managers in each Agency to:

(a) Determine what computer programs must be written

(b) Determine what internal operating procedures must be established

(c) Estimate the cost in terms of dollars and man-months required to write the necessary computer programs.

4. METHOD OF OPERATIONS FOR COINS I

a. Requests (or interrogations) which require information from files in another Agency's system will be transmitted to the appropriate Agency via secure data link. The computer of the requesting Agency will continue to transmit a request (interrogation) at 15 second intervals until a receipt number is received for the request from the computer system of the other Agency. The next request (interrogation) will not be transmitted until the receipt has been received by the requesting Agency for the preceding interrogation. This does not mean that the receiving Agency does not queue this request after it has been receipted for.

b. The computer system receiving the request will:

(1) First, receipt for the request

(2) Second, validate the request by determining that:

(a) The specific or "canned" interrogation programs indicated

are available and that the requesting organization is authorized to use the program(s).

(b) The file(s) to be searched are currently available in the system.

(c) Requesting organization is authorized to search the files specified.

(3) Third, respond with service message as required (e.g., "Interrogation not properly formatted," etc.)

(4) Fourth, prepare and forward a proper response message to the requesting Agency's computer system containing: (a) the desired data or (b) an indication that no data is available, or (c) an indication that the requesting Agency isn't authorized to use either the specific program or search the file requested.

c. The computer system of the requesting Agency will be responsible for:

(1) Handling its own bookkeeping. This includes such elements of information as:

(a) The receipt or job number assigned to each request (interrogation) submitted from a remote station.

(b) The date and time request was submitted from the remote station.

(c) The number of the remote station submitting the request or which is to receive the answer.

(d) The name, organization and telephone number of individual submitting the interrogation.

(2) Maintaining records with respect to requests, receipt and responses transmitted between the various computers. This will include such information as:

(a) The receipt or job number assigned by the external Agency's computer. It will also relate this job number (receipt) to the job number (receipt) previously assigned to the request from the remote station.

(b) The date and time messages (i.e., request, receipt and response) were transmitted to and received from the external computer.

(3) Processing or manipulating the information received in response to an interrogation. This will involve such processing as:

(a) Melding information extracted from several files

(b) Summarizing and formatting the output

(c) Checking the classification level of a response and insuring that the remote station is authorized to receive this data

(d) Forwarding output to the appropriate remote station after determining that all security considerations have been met.

IMPLEMENTATION SCHEDULE, COSTS AND RESPONSIBILITIES

1. IMPLEMENTATION

a. Target Date

1 December 1966, is the target date for connecting the computer data communication links to the switch and proceeding the testing and implementation of the system. Approval of this plan commits each participating Agency to install and conduct testing of its portion, hardware and software, prior to the recommended date.

b. Constraints

Following are the constraints imposed on implementation of COINS I:

(1) The connection to NSA cannot be completed until after the RYE system and TIPS have been upgraded which is tentatively scheduled for second quarter FY-67.

(2) The connection to CIA:

(a) NPIC cannot be completed until after they have upgraded their system from a UNIVAC 490 to a UNIVAC 494. The upgrading of this system is tentatively scheduled to be completed during October 1966.

(b) Computer Center cannot be accomplished until the IBM 360/50 computer and software have been installed and checked out. This is currently scheduled for second quarter FY-67.

(3) The connection to DIA cannot be completed until (a) after the IBM 1410/ISIC becomes operational which is tentatively scheduled for April 1966, and (b) the IBM 7740 has been modified to serve as the communications switch.

c. Costs

For the most part, the cost of implementing COINS I in terms of manpower and money can be absorbed by each Agency without any major problems. A breakdown of additional cost estimates for COINS I is contained in Table IV.

2. RESPONSIBILITIES

a. General

Each participating Agency will provide the funds and manpower necessary to acquire the hardware or produce the software required to implement COINS I by 1 December 1966.

b. Communications and Cryptographic Equipment

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Each organization in COINS I will be expected to provide its own terminal equipment and it appears that it can be provided from within existing resources eliminating the need for initiating any procurement action.

(2) DIA will be the communication switch in COINS I and as a result has agreed to pay the cost of renting the 4C conditioned communications circuits (i.e., data links) from DIA to CIA (i.e., Computer Center and NPIC) and to NSA.

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(3) State will pay the cost of renting the 100 wpm teletype line from DIA to State Department, as well as the cost of procuring and installing their remote station.

c. Software

Following is a general description of the software each Agency must produce to implement COINS I:

(1) As previously indicated, both NSA and NPIC are currently upgrading their UNIVAC 490 systems with UNIVAC 494 systems. Arrangements have been concluded between NSA and NPIC which will result in an interrogation compatibility of software. As a result, the interrogation procedures and format for both of these Agencies will be similar. In fact, four programmers from NPIC will be working in NSA/C442 for the purpose of acquiring a complete, working knowledge of the on-line TIPS.

(2) NSA must either provide or modify the following pieces of systems software scheduled for TIPS I to permit the participation of NSA in COINS I:

(a) Users Language

As previously indicated a "users language" is being provided as part of TIPS I and it is also a requirement for the participation of NSA in COINS I.

(b) Acceptor Program

Must be written to analyze the incoming messages and interrogations to insure that the other Agencies are authorized to interrogate the file(s) or use the specific (canned) interrogation indicated in the message. This program also checks to insure that the file is currently available in the systems.

(c) Translate Program

Must be written to reformat NSA interrogations into a format acceptable to the DIA IBM 1410/ISIC system. This will not be necessary in the case of NPIC as both NSA and NPIC will be using the same interrogation procedure and format.

(3) DIA will have to modify the IBM 7740 hardware and programs to handle message switching between Agencies including the necessary bookkeeping and code conversion.

(a) The IBM 7740 at DIA will have to convert all outgoing transmission from BCD to ASCII and vice versa for incoming transmission.

(b) DIA has eliminated the necessity of writing an IBM 1410 "Translate Program" by requiring DIA and State users to utilize the NSA/NPIC interrogation language and format. DIA has eliminated the need for writing an "Acceptor Program" by making all of the files in the IBM 1410/ISIC system available to the intelligence community.

(4) CIA - Computer Center

(a) Users Language

A "users language" will be provided for the participation of CIA in COINS I.

(b) Acceptor Program

Must be written to analyze the incoming messages and interrogations to insure that the other Agencies are authorized to interrogate the file(s) or use the specific (canned) interrogation indicated in the message. This program also checks to insure that the file is currently available in the system.

(c) Translate Program

Must be written to reformat CIA interrogations into a format acceptable to the other remote computer systems.

d. Computers

(1) Each Agency must provide its own self-scheduling remote access computer system or make provision to tie into another Agency's system, (e.g., State is tieing into DIA).

(2) Linking together of unlike computer systems presents some interesting software and hardware compatibility problems which must be solved before more sophisticated or complex systems can be implemented. COINS I provides an operational test facility for developing solutions to the problems associated with the linking together of unlike computer systems. It should be pointed out that in COINS I the IBM 1410 system is a character-oriented computer using BCD coding for internal operations while the UNIVAC 494 is a fixed word length computer utilizing any desired internal code.

The problem of linking unlike computer systems together must be solved as it would be impractical to require each participating Agency to procure, install and maintain identical or similar computer systems from one manufacturer. Theoretically, some of these problems have already been solved insofar as COINS I is concerned, with the adoption of a common data rate (i.e., 2400 BPS) and a standard communications code (i.e., ASCII) for computer-to-computer operations.

(3) Several provocative questions have been raised however, with respect to computer-to-computer operations in COINS I particularly regarding the linking together of unlike computer systems.

(a) Isn't there an excessive amount of expensive computer time involved in translating from the:

1 The internal computer code (e.g., BCD) to ASCII and vice versa or

2 Users language (e.g., ISIC/Query language of DIA) to another Agency's query language (e.g., NSA-TIPS Interrogation LanguagE TILE)?

(b) Wouldn't it be cheaper in terms of programming to make it mandatory for all participating Agencies to have like computer systems (e.g., GE 645, IBM 360, UNIVAC 494, etc.)?

(c) What is the practicality of requiring all participating Agencies to have like computer systems? What are the advantages and disadvantages?

(4) A concerted effort will be made by the COINS Committee during the operations of COINS I to develop realistic answers to these questions based on actual operational experience rather than attempt to philosophically answer these questions at this time.

e. Training

DIA will provide the necessary training for a limited number of State Department personnel in the use of the ISIC query language.

3. RESPONSIBILITIES OF COINS COMMITTEE

The COINS Committee unless otherwise directed by CODIB will continue to function as the overall coordinating and management group during the implementation phases. They will concentrate on inter-Agency problem areas. Specialists from different interest areas will be brought together in a series of panels under the auspices of the COINS Committee to develop data standards for files in COINS I as well as COINS II. These panels will cover such areas as (1) personalities, (2) Order-of-Battle (3) Installations, such as, airfields and (4) geography, etc. The Committee including specialists outlined above will also concentrate on developing plans for COINS II as well as the criteria and procedures for evaluating COINS I.

4. EVALUATION

a. A technical evaluation of COINS I will be conducted and submitted to CODIB approximately six to nine months after the system has been in operation. Operational evaluation of the COINS I system will be the subject of additional planning. The initial data files in the system may not provide sufficient, valuable intelligence information to be considered as a suitable basis for an operational evaluation of the system. Therefore, operational evaluation may have to be postponed until the number of files in COINS has been increased to include enough information to be of material assistance to the participating Agencies.

b. Since a prime reason for undertaking COINS I is to provide abase of experience for a future system, it is vital that accurate data on the use of the system be gathered as it evolves. Two kinds of information are important: the load and activity within each Agency's computer system and the characteristics of the traffic passing through the communications switch. System logs maintained automatically by each Agency's computer would provide the first kind of data in reliable form. A separately identified log should be maintained automatically by the computer handling the communications for the network. This log should consist of a chronological list of all activity within the network so that information on such things as the total number of messages sent per day, the number of messages in each message category, the number of messages per Agency, the time peak loads, and message queue lengths could be obtained. All system logs should be available in some form to the COINS Committee for use in evaluation of the overall system.

c. An evaluation program for COINS I should be in operation from the very beginning. If formal evaluation is left to the last, the data required for evaluation will not be available, or will be incomplete, or will not be in the proper form. The formal evaluation could be carried on by a sub-committee of the COINS Committee. Such concurrent evaluation would benefit the system designers and implementers by providing recommendations and feedback in time to allow incorporation in the evolving system.

d. Simulation of COINS I will be carried on concurrently with the development and early operation of the system. Possible responses of the planned system to unusual peak loads, or to unexpected variations in response time within the Agencies' computer system could be determined before the loads in the real world are heavy enough to give significant data for drawing conclusions. The effects of alternate message switching strategies could be explored. In short, some form of simulation effort will be sponsored by the COINS Committee in order to aid in the design and early test of the system and to provide a basis for evaluating the system. Such simulation activity will use the two types of log data mentioned above, i.e., Agencies' system logs and the log of the communications facility.

e. Within the limited resources available NSA/R5 will perform simulation studies based on machineable system logs (i.e., magnetic tapes) provided by the participating Agencies. The log maintained by the DIA switch (i.e., IBM 7740) is of particular importance for these studies.

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