S-E-C-R-E-T

IHC-D-124/1
9 October 1968

U N I T E D S T A T E S I N T E L L I G E N C E B O A R D

INTELLIGENCE INFORMATION HANDLING COMMITTEE

MEMORANDUM FOR THE UNITED STATES INTELLIGENCE BOARD

SUBJECT: NSAM 368 (Intelligence Information Handling System)

REFERENCES: (a) USIB-D-71.1/1
(b) USIB-D-71.1/2
(c) USIB-D-71.2/1

1. Forwarded for the Board's consideration and concurrence is a proposed response to Mr. Walter W. Rostow's memorandum of 8 May 1968, subject as above. Mr. Rostow requested further information on DCI actions pertaining to NSAM 368 by 22 October 1968.

2. In response to this requirement, a preliminary plan for improving the Community Information Handling System (CIHS) has been developed by the IHC (Attachment A). Information on the current status of component information handling activities is also provided (Attachment B).

3. A proposed Memorandum for the President which forwards Attachments A and B is also provided. It notes that the problems involved in changing established intelligence information data handling operations are complex and must receive additional study before time phasing and cost estimates can be provided as requested by NSAM 368 and reiterated by Mr. Rostow.

[redacted]

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Chairman

Attachments:
As stated

NSA review completed

DIA review(s) completed.

State Dept. review completed

NAVY review completed.

S-E-C-R-E-T

MEMORANDUM FOR THE PRESIDENT

SUBJECT: NSAM 368 (Intelligence Information Handling System)

1. This report is submitted in response to a memorandum from Mr. Rostow, dated 8 May 1968, which requested (1) a more definitive picture of the projected intelligence community-wide information handling system; (2) a report on progress made by individual departments and agencies in the development of information handling systems which meet their respective needs and fulfill the requirements of the projected overall system; (3) the estimated costs, allocated to successive phases of the development of the community-wide system; (4) a more precise estimate as to the time phasing; and (5) information responsive to requests set forth in NSAM 368 which were enumerated in the first paragraph of the memorandum.

2. Attachment A hereto is a preliminary effort toward developing a plan for improving information handling in the intelligence community, prepared in consultation with the United States Intelligence Board. My previous memorandum on this subject, of 22 April 1968, indicated that the requisite

community-wide system would follow from the continuous improvement and integration of component agency systems. Attachment A translates this concept into a number of actions or subplans involving community management; community requirements; component system inventory; selection, development, and integration of component systems; standardization of common data elements and codes; education, training, and documentation; and development of community experimental/trial information handling services.

3. The steps called for in Attachment A set up an orderly process for combining existing and presently proposed systems, together with such additions as may be required, into a system to serve community needs better. They identify the need for, and nature of, adjustments to existing sub-systems which would improve overall community information handling performance and efficiency without jeopardizing on-going intelligence support operations. Because we are dealing with operating information handling systems which currently are providing support to the members of the intelligence community, care must be exercised in proposing and in effecting necessary adjustments.

4. Your attention is invited to Attachment B which summarizes projects at the several intelligence agencies and describes a number of proposals for improvement of information handling that may be applicable to the community problem. These efforts and others noted

in the Intelligence Information Handling Committee (IHC) Annual Report (previously submitted to PFIAB, 9 September 1968) indicate the progress which has been made in meeting individual agency needs and in satisfying community-wide requirements.

5. The problems involved in improving established intelligence information data handling operations are complex, and solutions may be costly. Additional study is necessary before I can respond to your request to time phase the development of the improved community information handling system or to provide cost estimates. I shall be pleased to keep you informed as progress is made on costing and scheduling. In addition, I propose that the IHC Annual Report (which will be updated by a summary progress report at the end of the calendar year) be accepted in the future as a normal means of reporting on community information handling activity.

Richard Helms

Attachments:
As stated

ATTACHMENT A

PRELIMINARY PLAN FOR IMPROVING THE COMMUNITY INFORMATION HANDLING SYSTEM (CIHS)

REFERENCES: (a) NSAM 368
(b) USIB-D-71.1/1
(c) USIB-D-71.1/2
(d) USIB-D-71.2/1

A. Introduction

This paper has two main parts, the Introduction and the Subplans. The Introduction provides preliminary remarks on the events which gave rise to the planning effort, the objectives of the plan, and an overview of the six facets of the plan.

1. Background

A history of the events that led to the preparation of this paper could go into extensive detail and several volumes if one wished to start ten years ago and trace the growth of the intelligence community and the efforts to develop systems to handle the spiraling quantities of data, information, and raw intelligence. It will be sufficient, however, to point to the exchange contained in the first three referenced documents, i.e., the PFIAB's request of the DCI, the DCI's response, and the PFIAB's reply.

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The important point in noting this background is that (a) there were criticisms of some aspects of the way in which information was being handled in the community, and (b) the DCI took a position in the 22 April 1968 Memorandum for the President which is characterized by the establishment of:

(1) the Intelligence Information Handling Committee with a Support Staff, and

(2) the USIB Objectives for Intelligence Information Handling (Reference d).

The IHC has acknowledged and reaffirmed this position in preparing this paper.

2. Guidance

This plan has its genesis in the first sentence of the second paragraph of reference (b),

"A community-wide information handling system will follow from the continuous improvement and integration of the component agency systems..."

and the fourth USIB objective:

"To develop, in response to NSAM 368, a proposal for the phased implementation of a community-wide information handling system."

The USIB objective is a proposal and the excerpt from the DCI

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Memorandum establishes a basic premise regarding implementation methodology, i.e.,

A CIHS is a product of continuous improvement and integration of component agency systems.

The IHC recognized that the referenced documents had other guidance to contribute in the field of management (Reference b):

The DCI expects to achieve effective management control, with the advice of USIB and using the Chairman, IHC as his direct representative.

- In the field of training (Reference d):

To develop training programs in information handling.

- In the field of research and development (Reference d):

To develop a coordinated research and development program for the application of information science to intelligence information handling problems.

3. Concept

The foregoing has led to a concept of a plan which has six facets or subplans:

I. Role of management in the CIHS.

II. Requirements for change in the Community Information Handling System (CIHS).

III. Inventory, selection, development, and integration.

IV. Standardization in the CIHS.

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V. Orientation, training and documentation for operators and users.

VI. Development of experimental/trial information handling services.

The philosophy employed in addressing these six elements is quite different from the usual system development planning exercise. The standard approach in system planning is to isolate the first event, the last event, and interpolate all the other events so that one can get from the first to the last in the requisite time with the approved resources. Our approach is to initiate effort on all six facets at the same time. It recognizes that an operational system exists at the present time. It is concerned with the acceleration of change in existing arrangements rather than the initial design of an information system. Thus,work on determining requirements and inventorying systems data can start at the same time.

The next point is that the plan is preliminary. This means that the steps of each subplan are stated in very general terms. No scheduling or costing considerations are provided. The plan is preliminary because it takes time to develop a detailed plan, and the time is not available. Also, it seems reasonable to obtain approval and/or guidance before proceeding along paths which may be judged unrewarding.

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4. Overview

The second part of this paper contains the six facets or subplans. Supporting discussion precedes the preliminary steps called for in each subplan. Therefore, the following paragraphs only provide an overview and do not substitute for the more thorough discussion contained in Section II.

Of the six, the management subplan is different in that it is not a plan -- it discusses the role of management. In effect, it interprets policy. The other subplans reflect the emphasis stated in the management subplan. On occasion, the steps of another subplan indicate that a function must be performed without indicating who is tasked. The guiding emphasis can be found in the management subplan. In any case, the steps in the various subplans should be considered on their own merit without concern about details which will be provided following the approval of this preliminary plan.

The experimental services subplan is also different from the others in that it comes closest to being independent. Also, it has its own management emphasis because the goal of an experimental service is consideration of the service for implementation, whereas the goal of the CIHS is an operational system. Thus, the experimental services subplan has a strong R&D emphasis not found in the inventory, selection, development and integration activity.

The goal of the inventory, selection, development, and integration subplan is to provide better service and conserve resources.

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In this activity, data is first acquired on systems in operation, development, or planning within the community. Next with CIHS requirements as a touchstone, certain systems could be chosen which appear to have the best chance of becoming more productively integrated into the community system, i.e., will, with some modification, better satisfy requirements for a community system. Finally, the systems selected are developed and integrated into the CIHS.

This approach will result in the identification of systems, which, when they reach community status, will replace duplicative systems. The objective of this exercise is not to create more systems, but to improve the productivity and response of existing intelligence information handling systems. Not all community requirements can be satisfied by this approach. New systems may be needed to round out the total capability of the CIHS. Alternatively, experimental services may have to be instituted to determine what form of service best satisfies the requirement or to help formulate or clarify a requirement. Some community requirements which are obviously high priority or readily satisfied should be given immediate consideration. Thus, the overall plan should be sufficiently flexible to accommodate the implementation of quick solutions within the context of total community requirements.

Unsatisfied valid requirements are important to the development of the CIHS. Moreover, the determination of such

requirements is potentially the most difficult activity in the entire plan. Specific requirements can only result from dialogues with those intelligence components and committees who have requirements to levy and/or have an interest in the successful development of the CIHS.

The standards activity is clearly necessary and in fact unavoidable in this concept. COINS experience and other efforts to exchange data between agencies or computer systems indicate that without standards the expense of data transfer becomes excessive. In recognition of the need for standards existing throughout the Federal Government, BoB Circular No. A-86 was promulgated and has been followed by a steady succession of attempts to select/develop and promulgate standards for government-wide use in information and data handling.

Education, training, and documentation are just as necessary because a system cannot be developed and utilized without timely and careful attention to these activities. The emphasis lies in two areas. First, there is the education, training, and documentation (ETD) necessary in developing a candidate system to community status and putting it into production status. Second, there is a need for ETD for the CIHS as a total system. ETD on the total system is rather more difficult to acquire than ETD for component sub-systems.

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5. Objectives of the Plan

The principal objective of this plan is to provide a Community Information Handling System which satisfies community requirements and is consonant with USIB objectives for intelligence information handling. In order to ensure that community users are satisfied with the CIHS and evidence this by using it, the CIHS must be a community project. Experience in community projects outside the confines of the federal government indicates that certain key words are usually associated with a successful venture. Some of these are: identification, involvement, contribution, cooperation, compromise, and community-spirit.

In his letter of 22 April 1968 the DCI does not provide a concept for a community information handling system as a goal toward which the community should strive. Rather, he proposes a process of continuous improvement and integration. Therefore, we are providing in this paper a preliminary plan for implementing the process proposed by the DCI.

The emphasis on processing tends to overshadow collection of intelligence data and its utilization -- primarily the latter. The individual user of information in the community is the human being. There has not been a great deal of concern about him, since man is the most flexible, adaptable, forgiving component in the entire

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network. This is not a very good excuse, however, to continue ignoring his requirements -- an attitude exemplified by staffing system design and development activities with technicians and analysts. The ratio of programmers to human engineers engaged on large data processing systems within the community is very lopsided. In contrast, industry, notably software houses, applies programmers and human engineers in ratios which range from 10 to 1 down to 2 to 1, depending on the size and nature of the job. A corollary objective for CIHS therefore would be:

> To provide a system which is tailored to reflect the fact that the individual user of intelligence information is a human being.

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B. Subplans

1. Subplan I - Role of Management in the CIHS

(a) Preface

This part of the preliminary plan does not follow the pattern set by the other subplans. Rather, this section presents the role of management in the CIHS. The reason for this departure is that we do not feel it necessary to discuss a plan for acquiring, developing, or instituting management. Management responsibility for community affairs is explicit in the mission and functions statements describing the role of the DCI.

Also the DCI stated his intention to manage the CIHS. This section, therefore, is an interpretation of the role of the DCI as CIHS manager in the various activities embodied in the preliminary plan.

(b) Introduction

The 22 April 1968 response to NSAM 368 indicated that the CIHS will evolve from the integration of existing intelligence component systems in information handling. The CIHS must evolve from these existing efforts in an orderly, timely fashion, and in manageable segments considering budgetary and organization constraints of the intelligence community. In order to achieve this end, the growth of the CIHS will be in two phases. The first phase will be a period in which CIHS management is concerned with reviewing existing component

subsequently referenced in this paper, are not unilateral in nature. Such actions will be taken after consultation with the component(s) affected, and as appropriate, with the USIB and NIRB. (Note that in references to actions or decisions on the development of CIHS by the IHC, it is understood that the Subcommittee on System Design and Development will serve as the action arm for the parent body).

Special attention must be given to the management of the activities associated with the experimental services. In particular, management constraints during the development of an experimental/trial information handling service should be minimized to provide the latitude necessary in R&D activities. When the service reaches the point that users are trying it out with an evaluation to follow, then the same kind of detailed planning, which characterizes component system modifications, should be employed in order that the difficult task of service evaluation has meaningful results. (Note that in references to actions or decisions on experimental services by the IHC, it is understood that the Subcommittee on R&D will serve as the action arm for the parent body).

(c) Management of the Development Phase of CIHS

An inventory of data on existing systems and selection of candidates for the CIHS will be conducted by the IHC with its Chairman serving as the representative of the DCI. The Committee will formulate its recommendations resulting from this process for approval by the DCI.

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The system developer/operator (executive agent) will be appointed by the DCI with the consent of the intelligence component concerned. The developer/operator will report to the DCI through his CIHS management representative.

Specifications for the development and integration of the selected system into the CIHS will be prepared by a development panel of the System Design and Development Subcommittee selected by the IHC.

The development panel will monitor the initial phase and report to the IHC on matters affecting changes in the role of a selected system, the role of the CIHS and the developer/operator's capabilities to satisfy the system's specifications. Monitoring will involve a review of the system's budgetary program as it relates to CIHS specifications as well as feedback on the development, viz., design, specification, engineering, and testing.

Resources will be identified in a separate program sub-element figure to be established for those systems selected to be integrated into the CIHS. These resources will be those required to operate the system as part of the CIHS. The DCI will identify resource requests for the CIHS to the BoB in consultation with the system developer/operator. A number of financial problems will arise in concerned intelligence components. These must be solved before CIHS can be implemented effectively.

(d) Management of the Development of Experimental/Trial Information Handling Service

The DCI will decide what experimental service is to be initiated and what component will act as executive agent. The informa-

tion necessary to make such decisions will be supplied by the IHC.

The Executive Agent's development plan will be approved by the DCI on recommendation of the IHC.

Monitoring of the developmental, experimental, and evaluation phase will be the responsibility of an evaluation panel of the R&D Subcommittee selected by the IHC.

An evaluation plan, based on criteria supplied by the evaluation panel to the executive agent, will be developed and administered by the panel.

The evaluation report and recommendations prepared by the evaluation panel and approved by the IHC will be forwarded to the DCI for action.

(e) Management of the Operational Phase of CIHS

Individual information handling systems of intelligence components do not constitute a single integrated CIHS without direction and control. The analogy of the jigsaw puzzle is apt. Some authority must have an overview of the CIHS so that as individual pieces are selected and developed to community status, the pieces fit together. Operation of the CIHS will demand management control so that overall system reliability, responsiveness, and flexibility can be maintained. Though the management of the CIHS will be the responsibility of the DCI, the day-to-day operation of its subsystems will be the responsibility of the intelligence components.

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2. Subplan II - Requirements for Change in the Community Information Handling System

(a) Introduction

The CIHS must have practical requirements levied on it so that the CIHS can function profitably for its users. These requirements should be arranged in priority order to serve as guideposts for the CIHS management. The requirements should include reduction in specific undesired information handling efforts as well as an increase in efforts to improve the handling of information in the community. In addition, some requirements may be established for achieving a healthy environment in which a community system can prosper. Aids to communication and data exchange such as secure telephone systems, content control code, and the item register may enhance the information handling process.

Requirements should originate from intelligence producers and users. Inasmuch as the members of the community are users as well as the developers of the CIHS, this situation suggests conflicting interests. It simply means that requirements for the CIHS should be defined and approved before development tasks are assigned.

(b) Steps in the Preliminary Plan

Step 1. The information handling requirements will be categorized and listed in order of priority. These categories should be expressed in broad terms such as data exchange, dissemination, standards, security principles, training and management techniques. The IHC will be charged with this task.

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Step 2. Detailed requests for information on other requirements will be issued. Arrangements for such data calls will be established by the IHC. All CIHS requirements will be submitted to the IHC for acceptance or further discussion with the submitter.

Step 3. The Chairman, IHC will consult with intelligence producers and users to assist in detailing the requirements for the CIHS. The dialogue must result in a definition of the requirement in precise terms. For example, if a CIHS requirement is to save money, the amount should be specified; similarly, if timeliness is a requirement, it should be defined in concrete terms.

Step 4. Following definition of the requirements the IHC will prepare a detailed list of CIHS requirements for approval by the DCI. If cost becomes a factor, the DCI will assign the requirement to the National Intelligence Resources Board for recommendations.

Step 5. The set of requirements for CIHS will be approved by the DCI. These requirements provide a basis for monitoring CIHS during its developmental and operational phases, and the possible initiation of developmental activities to provide a community capability not achievable through the modification of existing systems.

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3. Subplan III - Inventory, Selection, Development, and Integration

(a) Introduction

The major present effort toward a CIHS is covered by this subplan. As a result, more detail is included in the various steps. The rationale for this approach to upgrading intelligence information handling in the community is embodied in the continuous improvement and integration of component systems.

The following paragraphs contain the steps of the subplan and supporting discussion. There are four major subdivisions:

(1) the inventorying of information on the individual or collective intelligence information handling systems which appear to hold some promise of satisfying requirements levied on the CIHS;

(2) the selection, from this inventory, of those systems which, through modification, may improve community information handling;

(3) the development of CIHS subsystems; and

(4) the integration of those subsystems into the CIHS.

(b) Steps in the Preliminary Plan

(1) Inventory

Step 1. A form or questionnaire will be designed to acquire the essential elements of information on each of

the intelligence information handling systems currently operating or planned by the intelligence components as well as those which have proved unsatisfactory or have been cancelled for other reasons.

Discussion. The design of the form will be difficult since the systems under consideration are a heterogeneous collection. Department and agency replies to NSAM 368, their annexes to the IHC Annual Report, and budget submissions should serve to identify those systems that are currently operating or planned throughout the intelligence community. However, these documents were prepared for the purpose of providing a catalog of intelligence information handling activities and accomplishments. In order to evaluate the potential of a component's system for community application, greater detail will be required.

Step 2. A project contact officer (PCO) will be selected for each system of each intelligence component.

Discussion. A PCO should be selected for each of the systems rather than one to represent all since there is probably no one person in each component who has the necessary familiarity with all of his component's intelligence information handling systems. The PCO's should be selected and nominated by his IHC member. The preferred manner of gathering information would be to have a team of two interviewers of the IHC take the forms to the PCO, fill them in with information he provides, and then have him (PCO) sign them -- thereby assuring

that the component which supplies the data supports its legality and completeness. If this is not satisfactory, the PCO should complete the forms himself, after he has been furnished with some written guidance. This guidance should have at least a list of the definitions of the more essential parts of the information needed on each system. In this case it might be prudent to have the data gathering team of the IHC visit each PCO at the time the forms are being issued to answer any questions that the PCO may have on how he should complete the forms. The interview approach is more convenient for the PCO and his component since it takes very little of their time. It is also likely to produce greater uniformity in system descriptions. The form dissemination approach saves time for the interviewers but probably lengthens the data gathering process considerably and reduces the element of comparability.

Step 3. All of the data obtained in the previous steps should be listed and organized.

Discussion. After the interviewers have either obtained signed information forms from the PCOs or the PCOs have returned their completed information forms to the interviewers via his IHC member, it will be possible to organize the data by information elements other than system ownership. Some of the ways this information could be listed are (1) by the purpose of the system, (2) by the uniqueness of the information in the files of the system, or (3) by the uniqueness of the techniques in handling the information. The

sorting and listing of data by other categories might bring to light some very interesting facts. Hopefully, some overlapping areas will become apparent. There may be some intelligence information handling systems which will show such identity of subject matter and data as to suggest that they should be handled by only one organization. While the elimination of unnecessary duplication would not be feasible for some time, these lists could help identify long-range goals. Moreover, these lists should certainly give some guidance toward the eventual CIHS design.

(2) Selection

Step 4. Candidate intelligence information handling systems will be selected for the CIHS.

Discussion. Before selection it will be necessary to review the requirements for CIHS candidates and for CIHS in toto. Part of the overall plan involves the obtaining of system requirements. When these requirements become known, the selection process can be completed for systems which show promise in satisfying these requirements. There are a number of ways in which a candidate system might be nominated for community status, e.g., a member of the IHC may nominate a system owned and operated by another member.

Step 5. Approval of the selected systems will be obtained.

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Discussion. In addition to approval it is to be expected that management will provide guidance on priorities, schedules, available resources, CIHS requirements, and other factors necessary to the preparation of specifications and an overall plan for CIHS development.

(3) System Development

Step 6. A system developer/operator will be selected and provided with specifications for the modification of the candidate system.

Discussion. These specifications will be prepared by the development panel. This panel will continue its activities during subsequent stages of development of the candidate systems for the CIHS.

Step 7. The system developer/operator will prepare a plan for the requisite modification with guidance from the development panel.

Step 8. The development (modification) plan will be approved.

Discussion. This step involves little that is substantive, but the process of approval is liable to many influences and thus deserves separate consideration.

Step 9. The developer/operator modifies the candidate system according to the approved plan.

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Discussion. While the development is underway, IHC and the DCI will utilize a rudimentary management information system directed by the development panel to maintain awareness of problems and successes. Integral to the successful accomplishment of a system development are such things as system testing, operator and user training, and the various levels of documentation to support these activities, as well as that necessary for the operator in day-to-day maintenance and operation of the system.

Step 10. The modified system is approved for operation as a subsystem of CIHS.

(4) System Integration

Step 11. Integrate the CIHS subsystem just acquired into the overall CIHS.

Discussion. It seems apparent that if the subsystem was modified without careful consideration of total CIHS requirements, then it cannot be integrated. If the CIHS requirements were recognized in the specification, planning, development, and testing stages of the subsystem, then the final act of integration should be a formality except for whatever testing is deemed necessary. The usual approach to proving a system which has just had a significant change in its total capability is to conduct a series of system tests. These tests prove, not only that the new subsystem can operate in the larger system environment, i.e., CIHS, but also that previous system capabilities have not been degraded by the change. The nature of such tests is

clearly a function of the degree of dependence between subsystems. Each integration would require a separate system test design effort.

4. Subplan IV - Standardization in the CIHS

(a) Introduction

Standardization has been defined as an action which causes some thing or some process to occur repetitively without variation or irregularity. Standards have been classified in various ways as:

(1) Technical - if they deal with products, materials, methods, and equipment.

(2) Procedural - if they deal with the manner in which some action is to be accomplished.

To date, primary concern in the intelligence community has been with technical standards and standardization as they apply to computer data bases, data exchange, and data transmission. There is increasing concern for the impact of standardization of computer operating instruction codes and character sets. Requirements for standardization in connection with program languages and optical character readers are also of interest to the intelligence community.

It is our purpose in the CIHS to develop a rational approach to standardization in the intelligence community. Standardization will be considered only in terms of demonstrable responsiveness to definable community needs. Certainly, standardization is not, and should not be an end in itself.

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(b) System Standards

The introduction of automatic data processing equipment into the intelligence environment highlighted the need for and gave impetus to the rapid development and utilization of many data element and code standards. The benefits of automated data processing could be made available only through uniform understanding (definition) of common information (data elements) and expression of them (codes) in data systems.

An overview of information processing in the intelligence community reveals not a lack of standard data elements and codes, but a multitude of them. Each individual data system employs standards and does so quite efficiently. However, from the viewpoint of data interchange, data transmission, and data correlation among existing data systems, individual system standards become a CIHS standardization problem.

At this time, there are few, if any, instances where an intelligence agency has developed and adopted any agency-wide data element and code standards. Perhaps the broadest application of standards has occurred in connection with the DoD Intelligence Data Handling System (IDHS) which, though a discrete system within DoD intelligence, does encompass many intelligence components of the Army, Navy, and Air Force worldwide, as well as DIA.

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To date, the need for department- or agency-wide standardization of individual system-oriented data element and code standards has not been demonstrated. These systems and the standards they employ perform as they are designed to do and to good effect. The problems incident to data interchange and data transmission between component systems have not yet become sufficiently critical to force a re-examination of overall "system" performance at the department or agency level. Further, the extent to which conversion, translation, and equivalency of non-standard data elements and codes by machine is feasible as a substitute for complete department- or agency-wide data element and code standardization in the intelligence community remains to be determined.

(c) Federal Standards

Since 1964 the Bureau of the Budget has been increasingly active in the development and establishment of data element and code standards for use throughout Government at the behest of the President and Congress. The stated objectives of BoB in achieving the greatest practicable degree of uniformity in data elements and codes are:

(1) to facilitate the summation of information and thereby enhance the exchange of information among data systems.

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(2) to facilitate the review and analysis of the budget processes and programs of the executive branch concerning more than one department or agency.

(3) to encourage the extension of the principle of systems integration under which information can directly be communicated among data systems without interrupting the process for translations or conversions, and

(4) to contribute to improving the products and effectiveness of data systems.

Federal standards (data elements and codes) as defined by BoB are of two types:

(1) Federal general standards -- for use by most agencies or departments in connection with an extensive number and variety of related or unrelated data systems and programs;

(2) Federal program standards -- for use in particular related programs concerning more than one department or agency. In this case, the same source data often are used by several departments or agencies, and exchange of information on a program basis is the rule.

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It is noteworthy that though intelligence clearly falls into the Federal program area, there are no intelligence program data element and code standards extant or under development. It is also clear that in the absence of intelligence program data element and code standards, intelligence may be forced to live within the framework of Federal general standards developed or selected from departmental candidates. Neither of the foregoing choices may provide the intelligence community with the tools it needs to effectively improve and integrate the intelligence information handling systems of its components.

(d) Community Standards and COINS

In planning and implementing the Community On-Line Intelligence System (COINS) Experiment, many of the problems incident to data base element and code standardization on an intelligence program basis have been surfaced. Generally, solutions to these problems have been confined to standardizing in the context of the data bases which have been made available in the COINS Experiment, though a conscientious effort at broader problem definition has been made.

Since COINS is the first real manifestation at community-wide systemization, it appears to be the logical place to initiate the determination of community standardization requirements. Actions by the COINS managers to date indicate that they are aware of the desirability of broad based standards which may exceed current data base commitments

by the participating agencies. It seems quite appropriate that initial efforts be dedicated to determining the essential characteristics of data elements and codes in all community data bases which are considered to be logical candidates for COINS. This is a reasonable first step in developing a methodology for analyzing CIHS requirements to determine standards which are explicitly or implicitly required.

Having learned from the COINS experience what standards were required and what procedures were employed to institute a standard or bypass it in some way, then we should be in a better position to examine CIHS requirements, CIHS candidate systems, recommendations for modification of the candidate systems, and make some suggestions.

These suggestions may take several forms. The simplest would be to recommend the institution of a system standard which does not conflict with, or replace, any federal, department, agency, or program standard. The occurrence of this case is rather improbable. A more likely suggestion would be to the effect that, if a candidate system is to reach community status, steps must be taken to redesign the structure of its data base to match an existing federal or program (community) standard.

It is conceivable that a CIHS requirement may be submitted which calls for the implementation of a specific standard throughout the community. This should be viewed warily, since it would appear that the intelligence component submitting such a

requirement considers standards to be the goal -- not a means of obtaining a CIHS. The emphasis should always be on providing a community capability through a CIHS whose subsystems must adopt certain standards in order to be useful and usable to the community.

(e) Steps in the Preliminary Plan

Step 1. Identify and define data elements and code standardization problems encountered in the existing COINS data base.

Step 2. Examine COINS solutions to the data element and code standardization problems encountered.

Step 3. Extend COINS data elements and code standardization problem definitions to subsystem files and data bases selected for CIHS.

Step 4. Identify data elements and code standardization requirements as a subset, or interpretation, of the CIHS requirements.

Step 5. Analyze each candidate system and its modification plans in light of requirements for standardization of data elements and codes.

Step 6. Develop a plan for standardization of data base elements, which is synchronized to the development and implementation schedule of the CIHS subsystem.

Step 7. Monitor the development of the plan to ensure adherence to the schedule and compliance with the standard being adopted.

Step 8. Analyze all standardization activities in terms of the total requirements for a CIHS.

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5. Subplan V - Orientation, Training and Documentation for Operators and Users of CIHS

(a) Introduction

It is a truism, and therefore apt to be ignored, that users of intelligence information (managers, planners, and analysts) must be oriented and trained regarding an information handling system and constantly kept abreast of changes and developments; to do less is to invite inefficiency, confusion and failure. With this statement as background, training and orientation must be considered of paramount importance in the development and integration of the CIHS.

The history of systems development during the past twenty years indicates that the causative factor for the demise of so many systems was a failure to address training and orientation in a responsible and timely fashion. Most will agree that a system, regardless of its praiseworthy potential, is useless if no one is trained to use or operate it. A more difficult point on which to achieve consensus is when in the life span of a system the training people should be represented and provide an input. In general, the answer is: the sooner, the better. This answer also depends to a limited degree on who is assigned. Those responsible for implementing the directives of the DCI should reflect the importance of training in the caliber of individuals tasked to represent training at requirements, design, and policy meetings. If the individual charged to represent training's

interest is an already overburdened career officer with no capability, interest, or experience in the field of establishing systems training requirements, then his attendance at requirements meetings is of little benefit. At the other extreme, if a professional systems training officer is available, then he can have a beneficial effect even if assigned late in the development phase.

The emphasis to this point has been on training and orientation. Documentation is no less important. Another truism is that the aspects of a system which go undocumented are those for which no one was given documentation responsibility. Those aspects of system documentation which are oriented to the user are not supported by strong parochial interests and therefore are often not specifically assigned. (The same statement holds for training delinquencies). This results in the development of a system which begins operations with adequate manuals on how to operate and maintain it, but inadequate or non-existent documentation on how analysts and others are to use it. Obviously the same lack of system utility that comes from lack of training can occur from lack of documentation.

It should be noted that the Orientation, Training, and Documentation (OTD) necessary for CIHS is only part of the totality of OTD which must be provided in the community. The responsibility for determining general requirements for education and training in information sciences and intelligence information handling has been

given to the Subcommittee on Education and Training of the IHC. Clearly, all CIHS education and training requirements are subsumed by that charter. Consequently the Subcommittee on Education and Training of the IHC must be aware of the accomplishments of certain of its objectives through the development of the CIHS. Moreover, the Education and Training Subcommittee will, at the request of the IHC, be the action arm in accomplishing the following steps of the plan to provide OTD for operators and users of the CIHS.

(b) Steps in the Preliminary Plan

Step 1. Identify those CIHS requirements which relate specifically to the OTD area.

Step 2. Isolate those requirements having generic qualities, e.g., training for EDP familiarization, training in the general capabilities of automated information, storage, and retrieval systems. This kind of training is not CIHS subsystem dependent and thus can be addressed separately by the IHC Subcommittee on Education and Training.

Step 3. Identify, either from requirements or systems knowledge, the various categories of OTD that generally accompany or are used to support a new system. This constitutes a checklist for subsystem developers to use during subsystem specification and development. Note that some types of training and documentation are

clearly the responsibility of the subsystem developer, e.g., documentation of test results.

Step 4. Similarly, identify the requirements for OTD which are not explicitly covered by the subsystem developers. The OTD which falls in this category must be supplied by resources other than the subsystem developer unless he is tasked to do it. The IHC will recommend a course of action and the DCI will assure the proper direction and funding to obtain the required service.

Step 5. Review, as part of the management responsibility, the progress in supplying the OTD requested of both subsystem developer and other sources.

Step 6. Identify, as an ongoing task, those areas of OTD requirements peculiar to the total CIHS and not encompassed in any of the subsystem development plans or activities.

Step 7. The IHC will develop a plan to provide total system OTD as identified in the previous step. On approving the plan, the DCI will assure the necessary direction and funding to acquire the service.

6. Subplan VI - Development of Experimental/Trial Information Handling Services

(a) Introduction

Since the intelligence community must continue to update its information handling processes and procedures through application of

modern technology, the CIHS is a meaningful and deliberate means of effecting such a revolution. However, the "continuous improvement" and "integration" approach is time-consuming and conservative. If significant advances in community information handling capability are desirable, then it is necessary to initiate a program to stimulate their achievement. The traditional approach is through research and development. This part of the plan addresses the application of R&D in order to provide giant strides in community information handling capability.

The rationale for suggesting experimental/trial services is simply that users of intelligence community services, like users of services elsewhere in our society, are not always aware of the fact that they need a service until it is provided to them. The calculated risk, which is exemplified in developing better mousetraps that no one has requested, pervades our society. Those developers of experimental/trial services who correctly interpret the unstated but real requirements of their target population are very successful; the trial service has popular appeal and the risk becomes profit.

This argument for suggesting the development of high-risk, expensive, experimental/trial community services might sound too revolutionary if COINS did not exist. COINS is quite definitely in the in the category mentioned above, i.e., an experimental/trial information handling service, As noted in the report of the Test and Analysis Panel, it is not an experiment in the scientific sense; rather the

service provided by COINS is being given a trial period to determine if it has user appeal. If the appeal is sufficiently great and the cost is not prohibitive, COINS may become an operational system. Even if COINS never becomes operational, it has already had a number of beneficial side effects, not the least of which is the emphasizing of the need to standardize data elements. COINS has also demonstrated that there are significant engineering hurdles in establishing a network of computers. The problem of multi-file, multi-user security has been removed from the ivory tower and has become a here-and-now operational headache. The list of benefits associated with the COINS activity is too lengthy for this discussion but the preceding examples indicate the values to be derived from developing an experimental/trial service.

In determining what experimental/trial service should be developed, management must recognize that this is the mechanism whereby R&D is employed to fill gaps in the requirements of the CIHS as well as adding to the dynamism of a process of gradual improvement. The steps necessary to develop an experimental/trial service are listed below.

(b) Steps in the Preliminary Plan

Step 1. Recommendations for any type of community experimental/trial information handling service will be presented to the DCI for his approval. All of the available details of the proposed experimental service will be provided by the IHC supported by the component that proposed the service. These details will include

purpose, duration of service, method of evaluating the service, cost, and any other factors needed to make a decision.

Step 2. The experimental information handling service will be approved by the DCI.

Step 3. The DCI will appoint an executive agent and inform him of his responsibilities in developing and operating the experimental information handling service in association with those intelligence components who are contributors or users of the service. These responsibilities will form the basis for a development plan which the executive agent will provide. This plan will include the schedule, manpower level, funds, description of the service to be provided, and criteria to be used in evaluating the success of the experiment/trial. The evaluation panel will develop an evaluation plan based on the test criteria given to the executive agent.

Step 4. The executive agent will staff the development of the experimental service and provide a progress report on a periodic basis to the evaluation panel. Management reports will be defined so that the evaluation panel can assess progress during the development and succeeding phases.

Step 5. The experimental phase begins when an experimental information handling service is made available to the intelligence community on a limited controlled basis. During the

experimental phase, the executive agent of the experimental information handling service will be permitted to make minor changes to the system to insure optimum performance of the experimental/trial service during the evaluation and test phase.

Step 6. The evaluation and test phase will begin after the experimental phase and will continue for the length of time specified by the executive agent and approved by the DCI. During the evaluation and test phase, the executive agent for experimental information handling service will provide the experimental service, and support the activities of the evaluation panel. There will not be any modifications to the experimental information handling service during this phase without prior approval of the evaluation panel. At the end of the evaluation and test phase, a completion report will be submitted to the DCI by the executive agent.

Step 7. The evaluation panel will prepare a report containing an evaluation of the experimental/trial service and its recommendations regarding CIHS candidacy, limited operation, further tests, discontinuance, etc. On approval by the IHC of the recommendations they will be forwarded to the DCI for action.

ATTACHMENT B

Annex A - COINS Summary

Annex B - NSA Summary

Annex C - DIA Summary

Annex D - CIA Summary

Annex E - State Summary

ANNEX A

Community On-Line Intelligence System (COINS)

BACKGROUND

This is a brief progress report on the COINS experiment which is being conducted jointly by members of the Intelligence Community in the Washington Metropolitan Area in order to implement the President's Foreign Intelligence Advisory Board Recommendation No. 2 of 15 June 1965. The concept calls for DIA, NSA, CIA and NPIC (CIA) to maintain selected intelligence data files in their remote information retrieval computer systems which will be connected by secure data links through a central switch at DIA. Users at each participating agency can access the information maintained at any other agency. The Department of State and the National Indications Center (NIC) will have remote query consoles connected to the DIA computer through which they can interrogate COINS files.

SIGNIFICANT NETWORK MILESTONES AND CURRENT STATUS

The following represents additional significant items since the last status report which highlighted the activation of the DIA/NSA circuit.

a. The circuit from the central switch to the Department of State remote query console was activated on 30 July 1968, and has undergone successful interrogation testing of DIA files.

b. The CIA National Photographic Interpretation Center joined the network on 20 September 1968 and successfully interrogated DIA files and received answers thereto.

c. The circuit to the National Indications Center has not been activated due to delays encountered in the procurement of necessary hardware.

d. The communication circuit between CIA and DIA was connected on approximately 1 September 1968. CIA has been able to receive and interpret data streams transmitted by DIA. Due to software problems, DIA has been unable to correctly interpret all messages transmitted by CIA. All of the CIA control software required to receive and respond to queries from the DIA network switch is scheduled to be completed and initially tested during the week of 7 October 1968.

ANNEX A

COINS MANAGEMENT

a. On 11 April 1968 the Director of Central Intelligence designated the Director National Security Agency as Executive Agent for the COINS Experiment (USIB-D-39.1/9, 11 April 1968). USIB-D-71.4/1, 3 June 1968 issued by the DCI contained the terms of reference for the experiment, and specified the Executive Agent's appointment of a COINS Project Manager to work with Sub-system Managers appointed by the participating agencies. Subsequently DIRNSA appointed [redacted] 25X1 of NSA as Project Manager. 25X1

b. Five interagency panels have been appointed by the Project Manager to accomplish actions relative to discrete parts of COINS.

The Soviet Biographic and Airfield Panels are concerned with data base requirements on these subjects.

The Computer and Communications Interface Panel is responsible for all aspects of systems interface.

The Test and Analysis Panel will develop the criteria and gather information to provide a base for analysis of system performance and utilization.

The COINS Training Panel was recently established to design a common user training course and coordinate training of system users in the participating agencies.

ANNEX B

National Security Agency

INTRODUCTION

The past six months have been used by NSA to make progress on two fronts: (1) initiate and continue the development of potentially new IH services and systems and (2) intensify efforts to define our IH problems and to discover new concepts of operation which show promise of solving all or part of the problems.

PROGRESS AND NEW ITEMS

A management study was conducted to assess the value of open source and collateral intelligence information being processed in NSA's Central Information Center. The study revealed that a large percentage of the support provided by the Center was from these sources.

To further evaluate and refine the study, the Central Intelligence Agency and NSA cooperated in an experiment to determine if a series of sample requests already researched by NSA's Central Information Center could be answered as effectively and with the same sources at CIA. As a result of this experiment, an intensive test is now underway to determine the feasibility of [redacted] 25X3 [redacted] relying on NSA personnel at CIA/CRS making direct use of CRS files to meet NSA information needs. Three NSA analysts have been collocated at CIA/CRS to conduct this test and 25X3 a CIA/CRS analyst has been collocated to the NSA Central Information Center to review its reference facilities. The scope of the study will include a review [redacted] processing, selection criteria and support 25X3 capabilities. We believe this cooperative approach to operating central reference services shows promise of broader application in the community.

The Director, NSA, is sponsoring a Workshop on Networks of Computers, 14-18 October 1968, with the objective of advancing the state-of-the-art with respect to operation of these networks. The COINS network is an example of such a network. Broad participation by the Intelligence Community, other government agencies, and invited outside consultants is planned.

A VIEW OF THE IH PROBLEMS

A study of the IH problems at NSA and in the Intelligence Community indicates that there are several aspects of the problem needing solution. These are summarized briefly, as follows:

ANNEX B

a. Interagency Analyst to Analyst Communication

The analyst to analyst communication is presently handled by a variety of classical means, i.e., secure and unsecure telephones, messages, report exchange, direct contact, etc. What needs to be done now is to experiment with expanded and newer means such as facsimile, wider availability of secure telephone, converstaion through COINS-like networks, use of PICTUREPHONE, in order to clarify the problem and the needs. Many of these electrical means, however, are dependent on expanded electrical communications, particularly in the Washington area.

The communication improvement in the local area can possibly benefit by the use of the new Bell System T1 carrier system. This service permits the transmission of 1.5 megabits/second and has the data in the form (digital) for easy encipherment and automatic routing.

b. Analyst Retrieval of Information

An important service to the analyst is the classical library or central reference service which provides him with back-up to his private desk file. Community efforts under COINS and local agency efforts, like TIPS at NSA, represent an approach to provide timely files in electrical format which the analyst can consult for useful,essential facts. Looking ahead there is a need to improve the analysts' browsing ability; to evaluate and provide, if useful, other means of storing and retrieving data such as Videofile; use of voice response units to provide aural answers to questions; and most important, improved indexing and tagging based on current analyst's needs.

Service to analysts entails indexing by specifics, i.e., names of people, places and things. This type of indexing has its own set of problems which are not easily mechanized. A special study is needed of the requirements of analysts for specific information and how they may be most effectively satisfied. The results of such a study would enhance the usability of material filed in Videofile, on-line systems, magnetic tape files, etc.

c. Availability of Key Intelligence to Decision Makers

This critical service has been highlighted as needing improvement by a number of high-level studies. New software and hardware state-of-the-art shows promise of permitting significant improvements. The classic problem is how to achieve selectivity and

still maintain timeliness. We now see concepts that should provide this dual requirement and resolve the conflict between the two.

A PROPOSAL TO PROVIDE A NEW SERVICE

Each of the above needs is presently being or can potentially be met by a number of different services based on a variety of concepts of operation. The possible forms of service improvement include increased capacity and improved quality of present services and/or provision of new and improved types of service. We have identified one approach as having particular merit.

NSA has initiated a project for the development of a SIGINT On-Line Information System. The purpose of the first phase of the project will be to prove the feasibility of providing SIGINT users, within NSA and customer agencies, with access to the National SIGINT Establishment published data base through a computer system. This project will implement the concept that the information handling problems in the intelligence community can best be met by making the producing agency responsible for the storage and retrieval of the information in its product, as well as for its distribution.

The creation of an integrated information handling system that makes full use of the tools of automation requires that the information be converted into a machineable form. The producing agency is the logical place for this to be done. NSA has developed methods for generating a computerized by-product to its signal intelligence production and at the present time has over 700,000 items in its computerized data base. This file is used for retrospective research in an off-line mode. NSA will use the expertise gained in the off-line project to develop an on-line system. The objectives of the system are:

a. Provide the cryptologic analyst with a direct access to the product of the national SIGINT establishment.

b. Provide the customer agencies with access to pertinent data from the product of the national SIGINT establishment.

c. Eliminate the need for duplicative file maintenance that now exists in the community.

d. Provide certain cryptologic management information data.

e. Minimize the requirement for distribution of hard copy end-product.

A technical development plan is being prepared which will show the necessary actions to be taken for carrying out the program.

POSSIBLE EXPERIMENTS

The next steps planned, as resources permit, are:

a. Following the completion of the proposal for an improved communications net in the Washington area, the concepts will be tried out on one or two of the possible links.

b. Following the study of analyst indexing needs, a proposal will be developed for a community-wide indexing and retrieval system to cover the recovery of information for the analyst from files in any format including digital, photo, video, microform, and hard copy.

c. Following the design of an indexing and retrieval system tuned for surfacing the key elements needed for crisis management by high-level decision makers, a pilot system will be tried using SIGINT product.

PRACTICAL CONSTRAINTS

All of the above ideas will come to naught if resources cannot be found to carry out at least some of the experiments and trial services. At NSA, the people resource is the most critical. The availability of personnel to install, operate, and maintain the sophisticated computer and communication systems needed to provide most of the proposed services will be the limiting factor.

ANNEX C

DEFENSE INTELLIGENCE AGENCY

INTELLIGENCE INFORMATION HANDLING ACTIVITIES

A. APPROACH TO THE PROBLEM OF INTELLIGENCE INFORMATION HANDLING

The DIA is making a concerted effort to approach improvement of DoD intelligence from a comprehensive system point of view. This involves addressing the information substance of user requirements, defining the system or network, identifying inadequacies in the system in this context, and then proceeding with improvements or remedial measures.

The Director, DIA recently approved a major organizational change designed to focus and intensify system improvement efforts within DoD intelligence and to serve as the Agency's interface with the USIB community for action responsive to NSAM-368. The new Directorate for Intelligence System Development will incorporate resources of the existing Automatic Data Processing Systems Center and link this capability to an enlarged system analysis and system development planning capability. A subordinate Intelligence Experimentation Center will be dedicated to the application, test, and evaluation of improved methods and techniques for intelligence analytical processes.

DIA's recent design of a long-range threat assessment program is an example of related improvement efforts in the DIA functional Directorates. It represents a major effort at improvement of estimative techniques and capabilities. This typifies the problem-oriented approach to system improvement in which performance of a critical function is enhanced first by improving functional system design, then by embracing the techniques and technology which are optimum for the function. The experimental Executive Management Planning and Control System (EMPAC) views DoD intelligence as a system of interacting processes and operations on data streams and seeks to optimize the performance of the entire system by addressing its parts in the context of the whole. DIA participation in analyses initiated by the Bureau of the Budget, Director of Central Intelligence, and Secretary of Defense further contributes to this objective.

B. DoD INTELLIGENCE DATA HANDLING SYSTEM

The worldwide DoD Intelligence Data Handling System (IDHS) consists of the facilities, equipment, special data communications, procedures, and personnel which provide tehcnical and operational intelligence data handling capabilities in support of general intelligence production in

U.S. Military Commands and organizations. It currently includes 53 intelligence computers installed in 22 locations. In addition, there are 23 computers installed in mapping and charting organizations.

This system has been developed on an evolutionary basis. The guiding principle has been that the system must be expanded in small enough segments so that they can be implemented before the external environment makes them obsolete, and so that their impact and effectiveness can be assessed before additional developments are implemented. To that end, the system is under frequent evaluation, both from a technical and from a user point of view.

Since its inception in 1963, the objective of the worldwide DoD IDH System has been to constantly improve intelligence data handling through the development of a system of mutually supporting facilities. Important steps which have been taken toward this end include:

(1) The development of families of computer programming systems (e.g., the Formatted File System and follow-on data management systems).

(2) The standardization of data elements and codes.

(3) The widespread exchange of data bases.

(4) Providing technical assistance to commands in their early stages of automation.

(5) The generation of management plans which delineate the respective responsibilities of DIA, the Military Departments, the Unified and Specified Commands, and various user commands

Periodic evaluations of the results of the IDHS efforts to date indicate that ADP is making its most significant contribution to military intelligence in the following broad functional areas:

(1) Exploitation of photography.

(2) Exploitation of ELINT.

(3) Targeting.

(4) Missile Trajectory Computations.

(5) Foreign Ship Activity.

(6) Various activity files pertaining to Viet Nam.

(7) Orders of Battle.

(8) Dissemination of Intelligence Reports.

(9) Storage and Retrieval of intelligence reports and foreign scientific and technical publications.

IDHS is beginning to make a significant contribution in the areas of direct support to intelligence analysts, and management of intelligence operations. To date, it has not made a significant contribution in the areas of estimates and warning. It is these areas to which increased attention must be focused in the immediate future.

Looking toward the future, major improvement efforts are underway in a number of areas. Basically, these efforts center on the development of: (1) remote access, time-sharing systems to enhance support to intelligence analysts; (2) a network of secure digital data links to permit rapid exchange of information among the various commands, DIA, and other USIB agencies; (3) automatic input devices and techniques such as the optical character reader; and (4) advanced training programs in information science for personnel at all levels. Some of the major projects currently underway are listed and described briefly below:

(1) Project ANSRS (Analyst Support and Research System):

The project is being pursued at the direction of the Secretary of Defense to develop, test, and evaluate, in an operational environment, the applicability of on-line, remote access, time-sharing computer technology to intelligence functions. It utilizes a GE 635 computer and 21 remote-query terminals in A and B buildings at Arlington Hall, the Pentagon, Pomponio Plaza, and Building 213 at the Naval Weapons Plant. The system is now undergoing operational testing and evaluation on live data bases.

(2) COINS (Community On-Line Intelligence System):

This system now interconnects computers at DIA, CIA, NSA, and NPIC and the remote-query console at State through a central network switch at DIA. Remote consoles permit analysts at any of these agencies to have on-line access to data bases in the other agencies.

ANNEX C

DIA is in the process of converting the computer used as the central switch from an IBM 7740 to an IBM 360/30; and its on-line computer is being upgraded to an IBM 360/50 from an IBM 1410.

(3) DoD IDHS Communications Network Plan:

This plan calls for internetting of computers in the DoD IDHS community by secure digital data links from DIA to the Unified and Specified Commands and from them to their component commands. Through the DIA central network switch, this DoD IDHS net will be connected to the COINS net and thus make possible the querying of data bases in any of the participating elements from any other element. It will also provide for tape-to-tape transfer of bulk data between agencies and make it feasible to allocate responsibilities for data base generation and maintenance. Installation will be on a phased basis during the period FY 69-71, starting with extension to DIA at Arlington Hall of the present data link between the Pentagon and CINCLANT now used exclusively for transmission of ocean surveillance data.

(4) Data Management System:

In order to take fuller advantage of third-generation computers, DIA has developed plans for replacement of the Formatted File System (FFS) with interim and long-range data management systems. In addition to providing greater data handling capabilities, the new systems will be operable on a variety of computers, permitting greater flexibility in the selection of computers for IDHS installations.

(5) Optical Character Reader (OCR) Automatic Indexing and Text Processing:

This is a project to develop applications of OCR equipment and ADP techniques in support of indexing, dissemination, and publication of intelligence documents. The initial phase demonstrated the applicability for conversion of typewritten text, by selected fonts, to machine-readable form which can then be processed by computer to prepare automatic indexes. The next phase will test the usefulness of the equipment and techniques for processing field-prepared reports in an operational environment, determine the technical feasibility and economic desirability of developing interfaces with current indexing and dissemination and provide cost effectiveness data as a basis for decision on operational implementation.

(6) Naval Ocean Surveillance Information System:

This is a project to develop an integrated, automated, all-source, worldwide ocean surveillance system which will monitor ship

activities on and under the world's oceans. Much of the system is already automated and operational and is being extended and improved to include field formatting of all major input sources, installation of additional secure digital data links to field commands, expansion of the data base, development of multi-level security protection for the all-source data base, and development of methodology for correlating all-source data on naval activity.

(7) Project CIRCOL (Central Information Reference and Control On-Line):

This is the operational version of COLEX (CIRC On-Line Experiment) which was successfully completed in FY 68. The experimental system provided access from remote terminals in twelve participating agencies to unclassified bibliographic references and documents on foreign Science and Technology (S&T) loaded into a Q-32 time-sharing computer at SDC at Santa Monica. An IBM 360/65 computer has been approved and will be installed at FTD, WPAFB, Ohio, in December 1968. The data base will be expanded to include classified materials and will serve as the central data base of foreign S&T information for the participating intelligence and R&D agencies.

(8) Project VASS (Visual Analysis Subsystem):

This system became operational at Headquarters, SAC in 1966. It has 6 BR-90 visual display consoles interfaced through a Univac 1219 computer to the SAC IBM 1410 system. The VASS consoles can display graphic materials from a self-contained slide magazine, and a variety of target, weapons, and mission planning data can be superimposed or displayed from files maintained on the IBM 1410. It is utilized primarily in functions associated with development of the Single Integrated Operations Plan (SIOP). Some 16 new applications are programmed for implementation through FY 73.

(9) Project PACER (Program Assisted Console Evaluation and Review):

This is an experimental man-machine interactive system which will provide photo interpreters and intelligence analysts the ability to develop and maintain, through exploitation and correlation of all-source intelligence, a common data base to support war planning, targeting, reconnaissance mission planning and to produce summaries of pertinent intelligence on significant installations. It utilizes BR-90 visual display consoles tied to a GE 635 time-sharing computer.

System tests began in June 1968 and will continue for 12 months. In the latter part of FY 69, it will be interfaced with VASS and additional I/O displays will be added.

Funding and personnel data relative to the operation and maintenance of the DoD Intelligence Data Handling System for FY 1969 through FY 1974 are included as an attachment to this summary.

C. THE INFORMATION SCIENCE CENTER

DIA has established the Information Science Center at the Defense Intelligence School to serve the intelligence community. Specialized courses of instruction in the application of information science to specific intelligence problems will be developed and conducted. It is planned that initial courses (scheduled for implementation in FY 69) will deal with the intelligence planning, estimates, and warning areas. Subsequent courses will address other specific categories of intelligence problems.

D. INTELLIGENCE EXPERIMENTATION CENTER

The Intelligence Experimentation Center is a developmental effort aimed at accelerating the application of modern methods, techniques, and equipments to the improvement of intelligence processes. The Center will use an intensive and direct experimental approach. It will design and conduct both laboratory and operational tests of innovative methods and technologies, and it will prepare implementation plans for the systematic introduction of demonstrated improvements into the operating intelligence system in DIA and in the intelligence elements of the military commands. The Intelligence Experimentation Center will be activated in FY 1969 and will respond to guidance and recommendations of the Director of Defense Research and Engineering.

ANNEX C

WORLDWIDE DoD IDHS - TOA

TOA ($ in millions)	FY 69	FY 70	FY 69 thru 74
DIA	$14.4	$15.6	$ 85.1
ARMY	7.8	8.1	44.3
NAVY	13.3	11.6	67.3
AIR FORCE	28.4	25.8	140.4
Total TOA	$63.9	$61.1	$337.1

WORLDWIDE DoD IDHS - Manpower

	FY 69	FY 70	FY 71	FY 72	FY 73	FY 74
DIA	508	511	511	511	511	511
ARMY	327	340	327	330	330	330
NAVY	548	550	550	550	550	550
AIR FORCE	1,272	1,322	1,267	1,267	1,267	1,267
Total	2,655	2,723	2,655	2,658	2,658	2,658

ANNEX D

Central Intelligence Agency

A. Information Processing Program

1. The CIA Information Processing and Exploitation Program for FY 1969-73, which is now being processed as part of our annual PPB cycle is as follows:

25X1

[redacted]

2. The fundamental objective of the Central Intelligence Agency's information processing and exploitation program is to support the analyst who produces finished intelligence and the operational personnel who collect information and carry out operational assignments. Guided by the intelligence requirements and operational decisions of policy officials, analysts and operators need information to make informed judgments and estimates. To make such judgments and estimates themselves and to evaluate the work of others, producers of finished intelligence must have access not only to the raw data but also to the methodology by which the data may have been processed. Although such access is within the computer state-of-the-art and is provided in specialized automated and manual files, its incorporation into a community computer network demands a sophistication of software design and a computer security environment which are clearly not within the current state-of-the-art. Both because of previous limitations in the state-of-the-art and the absence of persuasive evidence of gain to the analyst, the Agency has proceeded cautiously with the creation of large automated central files. In an effort to control the input of information to his files and the way the information is manipulated, including the proper application of security compartmentation, the analyst has preferred limited access files whether or not the files are automated.

3. The large central storage and retrieval files of the CIA (and other intelligence agencies) have been used mainly to meet general reference requirements. They have tended to contain index or pointer data to documents or to other files rather than to contain information per se; a major goal of more recent system design has been provision of more rapid and accurate information retrieval. Several attempts in the USIB Community to create such files have died a borning and others have been characterized by low use rates, unsatisfactory response (in terms of analyst requirements), and, high maintenance costs.

We have renewed this effort in the light of the latest advances in the technology of information handling but we intend to proceed cautiously in view of the serious problems remaining, particularly in the high costs for input to such files.

4. Although we have sought to keep abreast of advanced technology and to apply it as it proved feasible and desirable, we have not installed automated methods for their own sake. In many instances, we have found that manual methods provide the only economical and workable solution to our data handling problems. We have constantly improved these methods, and replaced them as appropriate, with automated methods. Typically, however, automated systems have involved more than the mere mechanization of existing processes. Rather, they have involved the redesign of files and procedures and the generation and manipulation of data which could not have been handled by manual systems. Finally, automated systems have themselves been constantly reviewed and improved where such action was needed. We have kept in mind that automated systems must be familiar to the user and acceptable to him, and that they are an improvement only if they better serve the intelligence operator and the producer of intelligence.

5. We consider as an important requirement the continuous development of compatible data elements, computer programs and processing equipment not only for large integrated systems but also for the optimal operation of manual or specialized automated systems. At the same time, standardization can become a fetish which overlooks the unique requirements of individual agencies and which limits creativity and the analytical power of automated systems. When this occurs productivity is reduced rather than increased. Our objective in standardization has been productivity rather than unanimity.

6. Although the design and maintenance costs of automated data handling are high, the processing costs are low. The effort to control the level of expenditure of the Agency in the face of rising cost of men and materials and the increasing use of expensive technical methods of collection has given us a strong incentive to adopt new techniques whenever they offered economies. In recent years, four large automated systems, two in advanced stages and two in the early operational stages, have been undertaken by the Agency. Withal, the cost of information handling continues to rise. Processing economies per unit have been more than offset by increases in the volume of information we process. Our present planning contemplates that total expenditures will level off after 1970, but this planning is based upon the evolution of present systems rather than on a jump into large automated community systems. We can spend more for automated systems than we have. But we can do so only at the expense of severely declining returns (cost-benefit ratios).

ANNEX D

B. Summary of Major Information Processing Projects

7. The intelligence information processing activities of the CIA have been undertaken to support and extend analytical effort rather than as ends in themselves. They have been limited by the conventions of the intelligence environment (such as compartmentation and need-to-know), but they have consistently sought to provide analysts with as complete and relevant a body of information as was available within these limitations.

8. Agency ADP activity can be divided into several major categories: (a) general information storage and retrieval projects -- the library-like systems which are repositories of a spectrum of information broadly relevant to the needs of analysts and operators; (b) special information storage and retrieval projects -- the personal, organizational, or specialty files which serve a single analyst or a group of analysts working in a common field; (c) data reduction systems -- applications characterized by a large body of data which must be perused in its entirety to select a small parcel of relevant information; (d) data transformation systems -- a process to change data from the form in which it is originally received to an acceptable form for another analytical operation. Although a particular Agency project may fall in more than one of the above categories this categorization is useful for discussion of processing activities.

C. General Information Storage and Retrieval Projects

9. The CIA has been engaged over the past six years in a major effort to redesign its central information storage and retrieval activities. This effort has focused on the application of modern automated techniques of information handling and on replacing a multiplicity of central information systems, compartmented by collection source and security classification, with a more generalized and flexible system. The design objective of this effort was to simplify the accession and classification of intelligence information and to improve significantly the value to the anslyst of newly structured all-source files.

10. The design effort is essentially complete and the Agency has begun to implement several major elements of the new system, including the development of all-source files, the organization of central reference analysts by region, document indices produced in machine readable form, and automated computer search and retrieval designed to operate in either a batch or on-line mode. The major remaining element, a complete set of computer programs (CAPRI) to support general information systems

will be completed this summer. Thus, we expect that it will be at least eighteen months before a preliminary operational evaluation of our general information system can be achieved.

D. Special Information Storage and Retrieval Projects

11. Special purpose information storage and retrieval is a product of the increasing division of labor in intellectual and analytical activity. It is also responsive to the explosion of knowledge and information which has made it increasingly difficult to date for central systems to meet particular needs. The result has been a growing requirement to classify and organize data to meet these special needs. Specialization tends to limit the general utility of the files, however, so that frequently the only consumers are the individuals who process and generate the information. Even where there is a wider potential audience, the data and the research methodologies used tend to be meaningful only to the specialist and to reside with him or under his control. Wherever possible, therefore, the intelligence product derived from special systems is incorporated into general information systems; in any case, their existence is made known to others who might find them useful. In the past, we have sought to incorporate specialized projects into general systems. Usually, however, the volume of data and the complexity of their manipulation have frustrated the attempts of general system builders to record more than the fact that special data systems exist, their relevant product, and where or with whom the systems reside.

12. Although, or even because, they are narrowly focused, we believe that specialized information systems can be highly productive, and justified both from the point of view of utility and of cost. Appropriate steps have been taken within the community to provide access to these systems in order to minimize duplication. These efforts are stimulated by common professional interests and interaction and by the maintenance and publication of the USIB File and Program Catalog. The latter provides a list of files and computer programs for the special purpose systems which have been automated.

E. Data Reduction Systems

13. Data reduction systems are characterized by the manipulation of large bodies of collected data (in analog form, or converted to digital form), the analysis and extraction of significant elements in the original data and the incorporation of these data into appropriate analytical files. Data reduction systems are usually co-resident with

special information storage and retrieval systems.

14. Most data reduction in the intelligence community results from the manipulation of data produced by technical collection devices. The product is often not usable intelligence in and of itself; but raw material for further analysis. Frequently, both raw material and analyzed intermediate information are maintained in machine files, which are copied and used by other intelligence agencies. The data sets and computer programs are less well advertized in the community than are those for special purpose information processing programs, but they seem to be as widely known and exchanged nevertheless.

F. Data Transformation Systems

15. Data transformation is difficult to define with precision, because it may range from simple input functions such as key punch, to optical character reading (OCR) systems, to elaborate analog-to-digital converters and automated printing systems. CIA activity in these systems has ranged from modest in the OCR field to substantial in analog-to-digital conversion, high precision plotting and graphics, and automated printing. The Agency has participated in government wide efforts to coordinate activity in the OCR and printing fields. It has made known to others both within and outside the government its procedures in precision plotting and automated cartographic applications despite the sensitivity of certain applications in this area. The extreme sensitivity and essentially developmental nature of much of the Agency's activity in high-speed, analog-to-digital conversion has barred widespread sharing of the results. Nonetheless, the agencies with processing responsibilities in this field have been kept informed.

G. Research and Development

16. Three years ago the CIA drew together into its Office of Research and Development a wide range of activities previously pursued in separate components. This office was charged with exploring information handling techniques at or near the edge of the state-of-the-art, and with developing techniques within the state-of-the-art which cannot be tested in a production environment. At present, a modest effort is being made to identify equipment and techniques which may augment intelligence information processing in the future and to explore in a laboratory environment the feasibility of incorporating them into the Agency and the community as soon as they are cost-effective. Of special significance in this connection is project QUIKTRAK, the development of an information system based on automatic data processing to maintain, retrieve and manipulate current data on Soviet Bloc ground forces and

ANNEX E

Department of State

Substantive Information Systems Program

The Department of State has approved the Substantive Information Systems Program as described in the report "A Modern Information System for the Department of State" (ANNEX E to DCI memorandum for the President dated 22 April 1968). The Substantive Information Systems Staff (O/SNS) has been authorized to proceed with its implementation.

For FY-69 the Department (of State) allocated to the Substantive Information Systems Staff a budget of $210,000 in contract funds and authorized an increase of 15 positions, raising the total Staff complement from 6 to 21 clerical and professional employees. These resources will be used to complete the detailed design of a selective dissemination system and a document storage and retrieval system. The design will include the building of a dictionary for machine processing, creation of indexing procedures, design of user profiles, and experimentation with text processing of telegraphic traffic. In FY-70 funds will be requested to prepare (1) computer programming of the dissemination system; (2) flow charting and testing of the storage and retrieval system; (3) detailed design of a document disposition system and the collection guidance system, and design of a complimentary system for selected foreign service posts.

In response to NSAM 368 the Department of State established a position of Special Assistant for information handling in the Office of Under Secretary Nicholas deB. Katzenbach. The Special Assistant is responsible for coordinating the Department's development of an improved system for handling substantive information so that requirements are identified and all interested bureaus are related closely in the design, establishment and utilization of the system. He will also assure through the Senior Interdepartmental Group (SIG) appropriate inter-agency coordination in the development of information handling systems.