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CODIB-D-82/4
17 May 1961

UNITED STATES INTELLIGENCE BOARD

COMMITTEE ON DOCUMENTATION

Terms of Reference for
Study of
USIB Information Processing Problems

1. Attached is the draft of terms of reference for the USIB study of the community information processing problems. The present draft incorporates the changes agreed upon as a result of the special CODIB meetings held at the CIA relocation center May 15-17.

2. Graphic attachments referred to in the text are not included.

3. CODIB approval of the present text will be sought at an early date, possibly by telephone concurrences. Otherwise, the text will be taken up at the next CODIB meeting, to be held shortly after our return from the CODIB Boston field trip.

Chairman

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Purpose of Study

1. The basic purpose of the study is to help the USIB and CODIB to prepare "guidelines for the development of information processing facilities in the Community" (USIB-M-115). "The study should seek to establish and define long-range goals, with particular emphasis on considerations attending the use of /and interpretation of information through/ automatic data processing and the development of compatible systems" (USIB-M-144).

2. The need for such guidelines stems from the growing complexity of the intelligence community, and the appreciable increase in the types and amounts of intelligence information which must be handled. The inter-dependence of the individual intelligence organizations and the high cost of processing information make it mandatory that remedial action be taken now.

3. The results of a study of the intelligence community will of necessity reflect the problems uppermost in each intelligence component as a

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consequence of providing information to, or receiving information from, the other

components of the community. Such problems should be identified and, to the

extent possible solutions for them should also be sought during the course of

the study.

4. To restate and summarize, we want to set guidelines for the develop-

ment of individual information systems and services of common concern which

take full account of the potential of modern techniques for processing informa-

tion in order to improve the collective effort.

Scope

5. The scope of the study will be comprehensive as to sources from open

literature through SIGINT or other "exotic" collection programs. Similarly,

it will have to take a broad view of the intelligence cycle and include in its

investigations collection and the field preparation of documents, communication,

systems input and information dissemination, storage retrieval and display

and user requirements for additional collection (See Attachment A).

Conceptual Approach

6. We visualize the study being carried out in various phases, with con-

siderable latitude permitted as long as the purpose of the study is kept clearly

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in mind:

Phase I:	Preparation of plan
Phase II:	Organising the effort
Phase III:	Fact gathering
Phase IV:	Analysis
Phase V:	Formulation of conclusions
Phase VI:	Formulation of recommendations

7. The control of the study should remain unmistakably and firmly in the hands of CODIB.

8. Dependence on outside help should be limited to expertise needed to make up deficiencies arising as a result of inability of the intelligence community to staff the effort from its own people. Non-government groups may be encouraged to undertake research efforts of value to intelligence at no cost to the Government.

9. The fact finding phase should in all probability include the identification of:

- the activities which by reason of function are to be included in the study.

- the needs of these activities for classified information and for open literature to discharge their intelligence missions.

- the problems of (a) knowing that the required information exists; and (b) gaining access to the information itself.

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- the problems of preparing input in view of the multiplicity

    of sources, variety, formats, security controls, languages;

    of the perishability of the information; and of the competition

    for information.

- the problems of dissemination by receiving processing centers,

    including matching receipts with requirements.

- the problem of servicing requests for information by retrieval

    from storage.

- current and long-range programs affecting any of the above.

10. The analysis phase should carefully examine questions of organization,

controls and procedures. The inadequacies of the present way in which the

intelligence community processes its imformation are to be identified.

Possible remedial steps should be examined, and statements made of

prospective advantages, disadvantages and difficulties.

11. Major components which we can predict will be directly involved are:

    a. State, including the Department and selected Foreign

        Service Posts.

    b. CIA, including the various reference services and research

        offices.

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c. Defense, including the JCS, unified and specified Commands.

d. Army, including ACSI, the Tech Services Intelligence Agencies, the Field Data System, and the Office of Research and Development.

e. Navy, including ONI, ONR and the Fleet Intelligence Centers.

f. Air Force, including AFCIN, AFIC, ATIC, ACIC, AFSC, AFOSR, ASTIA, and the AF major overseas commands.

g. NSA and associated Service components.

h. National Photographic Interpretation Center (NPIC).

i. National Indications Center (NIC).

j. AEC.

k. FBI.

l. Non-USIB agencies, such as USIA, NSF and NBS.

12. Numerous studies have been made over the past few years covering various aspects of the activities and problems of concern to us in the above components. These studies should be exploited as much as warranted in order to avoid unnecessary efforts during the fact-finding phase. Projects such as WALNUT (CIA's counterintelligence name check system), ACSIMATIC (Army's man-machine system), and the AIDS project (Air Force 438L system)

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are cases in point. In addition, there exist many general studies which provide contributions on the more theoretical aspects of our problems (e.g., NBS reports series prepared by the Research Information Center and Advisory Service on Information Processing).

13. Remedial action taken by the community may be piecemeal, hence recommendations for action in specific areas need not await the completion of the entire study.

The Study Staff and Its Mission

14. The Staff assembled for conducting the study shall be a full-time working group with no other commitments. Members are to come principally from various Government intelligence organizations.

15. Expert consultants with skills needed to complement those of the members of the group are to be drawn from organizations outside of the intelligence community (some full-time, some part-time).

16. Staff personnel are to be qualified to develop long-range plans for information processing and to establish guidelines for the introduction of methods and equipments to achieve the long-range goals.

17. This analysis team should have within itself the capability to apply methods and techniques of analysis to a wide variety of system problems.

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While knowledge of state-of-the-art in equipments and utilization techniques
must also be contained within the team, the primary focus should be on the
operations--the problem of the users. Specification of the mode of informa-
tion transmission is an engineering problem; determination of what informa-
tion needs to be transmitted and in what format is an operations problem.
The efforts of the group should be directed much more toward an operations
analysis than an engineering analysis. In this regard, one of the pressing
tasks the team would face is the identification of the information links among
the various organizations and the problems of interface between them.

18. It is apparent that the orientation of the analysis team is critical to
its success. It must be USIB oriented, its sole mission being to devise means
for improving information processing services throughout the intelligence
community. This attitude must be reflected in any system recommendations
or specifications resulting from the group's efforts.

19. As a by-product of the planning function and its orientation toward
service to the community, the analysis team could comment on the desirability
of mounting a continuing effort in its field of investigation.

Sources of Manpower for Staffing

20. We estimate that the complement of the Staff will approximate 20
professional personnel, including full-time consultants for a period of at

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least one year. Secretarial assistance will be provided as needed.

21. Each of the following organizations shall provide at least one competent individual: State, Defense, Army, Navy, Air Force, NSA, NPIC, JCS, AEC and FBI. CIA shall provide up to 10 plus secretarial support.

22. In addition the staff may be augmented, as needed, by specialized outside assistance to be selected from such organizations as: SRI, RAND, SDC, MITRE, and PRC. Organizations approached will be invited to make competent individuals available. We hope that the cost to the Government will not exceed $30,000/man/year, including expenses incidental to any necessary move. Costs incurred over and above normal operating costs will be borne equally by DOD and CIA.

Staff Control

23. The staff shall report to a staff director, who shall report to the Chairman of CODIB. Arrangements will be made for periodic reporting by the Staff to CODIB and USIB.

Advisory Panel of Experts

24. Individuals in the Government having special competence in a field of the Staff's responsibility will be identified and, with their consent and

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that of their superiors, will constitute a panel of consultants to furnish advice
and assistance.

Security Clearances

25. All members of the staff shall be cleared for special intelligence; a
selected number shall be cleared into the NFIC; part-time experts will be
cleared on a need-to-know basis.

Prospective Results

26. If properly organized and carried out, helpful results from this study
may be expected in four general areas:

(1) Clarification of responsibilities (see para. 27);

(2) Clarification of compatibility goals (see para. 28);

(3) Inauguration of "system of systems" concept (see para. 29);

(4) Creation of an integrated research support program (see para. 30).

27. Responsibilities. Here we should get some clarification of how to
allocate responsibilities for performing processing services in support of
individual systems charged with carrying out specific missions. For example,
biographic information is a general category of intelligence; query, should
processing be centralized in support of a number of other components such as

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NIC (early warning) or SAC (targeting and air defense analysis), or should processing be decentralized?

28. Compatibility. We should get help in firming up concepts, now rather loose, about the need for common coding, common formating, compatible computer programming (an extension of the COBOL approach), compatible remote systems input equipment, and compatible processing equipment. The entire business of planning data exchange programs, which is a corollary of the biographic example mentioned above, should be clarified. This effort should include the integration of dissemination and requirements control practices. The study should not only identify desirable goals but recommend means for their attainment.

29. "System of systems" approach. The existence of a multiplicity of separate but interdependent systems requires a broader look than is usually required when a single system is under study. There are certain basic processes common to all our systems (see Attachment B), and there are also certain operations common to all mechanized information storage and retrieval systems (see Attachment C for one such scheme including both textual and diagrammatic information). Moreover these processes and operations are performed on a data base much of which is common to the

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major intelligence components. A "system of systems" approach would therefore

seem to insure an integrated intelligence effort as a minimum result.

30. **Research program in support of USIB.** The study will probably result

in identification of problems which will require exploratory research in areas

of common interest. Projects meriting community sponsorship should be

referred to a mechanism through which the several interested agencies could

support and direct a single development effort, or a group of closely related

or parallel efforts (see Attachment D).

Key Problems Amendable to Analysis

31. In a further effort to make as clear as possible what we want from

this study, the following tasks relative to intelligence processing activities

should be accomplished during the analysis and subsequent phase of the

project:

    a. Determine an effective allocation of functional areas

       of responsibility of individual departments or agencies

       engaged in intelligence processing activities within the

       intelligence community.

    b. For functional areas of common interest determine

       appropriate means of direction, integration, coordination

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or allocation of responsibilities within the intelligence

community to ensure effective accomplishment of assigned

mission; consider that improved EDP capabilities provide

a tool for more latitude in allocating responsibilities, but

also that some new restraints that must be identified are

imposed by the interplay of standardization and/or

compatibility and the costs of operating EDP installations.

c. Through a knowledge of existing and planned capabilities

of the various components of the community, including a

survey of USIB holdings and the scope and subdivisions of

the "common data base", determine means of providing

direction to ensure the effective discharge by these

components of proposed allocated responsibilities through

    (1) Use of standardized procedures and techniques

    (2) Use of compatible equipment systems.

d. Determine an effective means within the intelligence community

to ensure a dynamic and consistent advance in the capabilities

of the various components of the community to prevent large

discrepancies in capabilities from hindering the effectiveness

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of the community as a whole, including provision for evaluative-

type experiments of general community interest but too

expensive in funds or manpower for one agency to consider.

Ensure that each component group at any time not only meets

its own needs but also provides services as required to the

community.

e. Determine the extent of standardization desirable throughout the

intelligence community in areas such as:

(1) Indexing, including re-evaluation of the ISC and

special consideration to relate any modified codes

to prior codes to allow for machine transformations

of prior coding efforts

(2) Input formating

(3) Problem oriented languages for computer usage

(4) Compiler/translator usage

(5) Display symbolics and means

(6) Adequate security control of data within EDP systems

(7) Document storage in hard copy and reduced image for

rapid retrieval purposes.

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f. Project the evolving needs for communications in support of

intelligence information processing activities and, in

conjunction with appropriate communications agencies,

appraise the adequacy of existing and planned communica-

tion facilities.

g. Determine the extent to which EDP can assist in areas such

as:

    (1) Indications and warning

    (2) Document reference

    (3) N-dimensional pattern analysis

    (4) ELINT processing

    (5) Evaluation of source data content and reliability

    (6) Dissemination control at all levels

    (7) Coordination of collection requirements and the

        matching of information as received to related

        requirements for purposes of dissemination and

        feed-back to permit continuous review and

        revision of requirements

    (8) Analysis of economic, transportation and logistic
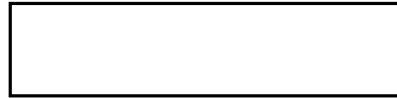
        system constraints

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(9) Targeting

(10) Systematic analysis of range activity.

h. Consider the need for and practicality of having a single

agency assume the archival responsibility for the community.

i. Establish means of accelerating progress in the above areas

in a manner consistent with the needs of the intelligence

community as a whole.

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Attachments