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Technical Report No. 349

AN OVERVIEW OF INTELLIGENCE
COMMUNITY AUTOMATIC DATA
PROCESSING

by

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ABSTRACT

This report summarizes the results of a brief assessment of Automatic Data Processing (ADP) activities within the Intelligence Community (IC), to identify promising avenues for future improvements.

Users needs and commonality between hardware and software systems are reviewed, and some alternative concepts are presented for data base management systems. Finally, policy and technical issues are identified together with means for achieving a Community-wide information system.

i

SUMMARY

The rapid growth of the Intelligence Community and the
orders of magnitude expansion of Automatic Data Processing with-
in elements of the IC have promoted decentralized planning and
management of software and hardware systems and data bases.
Many of these systems have common characteristics, and in that
sense are duplicative. It is believed that these represent op-
portunities for improved efficiency and cost saving.

For example, the prevalent IC ADP systems perform communi-
cation, collection, processing and production functions. Some
of these systems possess the characteristics of data base man-
agement systems (DBMS), and are therefore considered amenable
to some consolidation, commonality and Community-wide accessing.
The CIA SAFE and DIA ADISS Systems fall into this general cate-
gory; in addition, 6 other major systems of this type were quick-
ly identified in this brief overview, and we understand that there
may be 30 such IC systems alltold. Hence the current Congres-
sional interest in SAFE/ADISS may in fact only be focused on the
tip of the iceberg!

This paper presents a few alternative concepts for devel-
oping broader based, Community-wide DBMS, merely to illustrate
approaches and associated advantages/disadvantages of each. De-
tailed cost-benefit analyses are needed to home in on system(s)
that smoothly transition from the maze that exists today, to
more efficient, centralized solutions for the future. These
analyses should be part of an organized effort which addresses
the feasibility and value of adopting or developing a Community
standard data base management system. This effort also extends
beyond the SAFE/ADISS question, because with time the existing
"home grown" DBMS will be outdated technically and will require
updating and replacement.

Fundamental to achieving Community-wide systems is the
resolution of a family of policy and technical issues which are
complex, and have mostly been treated piecemeal in the past.
These relate to sharing data bases; agency access; technical
data standards and languages; interfaces and security. Specif-
ics are discussed in Section IV.

An area of immediate concern to the DCI is a timely and well thought out response to the Senate Select Committee on Intelligence. However, this response is only a subset of broader questions of Community-wide structuring, integration, planning and management. The SSCI presentation can be viewed as a leap-frogging opportunity to generate an agreed-upon roadmap for short-, medium-, and long-range IC ADP planning. For example creating a centralized management structure would be an earnest of the DCI's intent to provide positive control over future planning and utilization of Community ADP resources.

Regretably, resources on hand at the IC Staff level appear woefully inadequate for the SSCI effort and certainly for any broad Community planning function. Some specific steps need to be undertaken, perhaps providing some help for handling the most immediate problems, followed by creation of a new, higher level management mechanism to address longer term ADP integration, technical, budgeting and planning functions.

TABLE OF CONTENTS

LIST OF FIGURES

Page

LIST OF TABLES

I. INTRODUCTION

1.1 This report summarizes the results of a brief assessment of Automatic Data Processing (ADP) activities within the Intelligence Community (IC). The work was performed for the Director of Central Intelligence under Task No. 4 of Contract 100400.

BACKGROUND

1.2 The Intelligence Community utilizes automatic data processing systems extensively to collect, process and produce National Intelligence. In the past, each organization in the Community has independently planned, managed, and budgeted for data processing related activities and computer hardware generally without regard to the needs or existing capabilities of the Community as a whole. The evolution of ADP and telecommunications within the Community has resulted in the development of many different computer software systems, some of which have duplicative characteristics and most of which are nonstandardized. This historical lack of centralized ADP management leadership and planning has resulted in the following:

- Duplication of technical efforts, which have partially resulted from the rapid growth of ADP in the Community

- Limited and questionable accountability for resource expenditures (no effective ADP cost or utilization/analysis)

1

- Limited Community planning for system inter-
  faces with only some interoperability and
  interconnectivity between systems

- Lack of effective Community standards for
  security, data elements and files, and sys-
  tem performance (despite efforts of the In-
  formation Handling Committee formed to pro-
  mulgate standards)

- Proliferation of diverse computer hardware,
  line protocols, and user terminals.

1.3   Recognizing these deficiencies, the Director of Central
Intelligence in the "National Foreign Intelligence Program
(NFIP) and Resource Guidance: FY 79-83" has expressed his deter-
mination that Automatic Data Processing and Telecommunications
are major issues that must be dealt with from a total Community
point of view.   Other government organizations have made similar
observations: the Senate Select Committee on Intelligence re-
port of 19 May 1977 noted ADP resource activities need more
careful coordination, direction, and interagency planning;   the
House Appropriations Committee report of 21 June 1977 was criti-
cal of the planned expenditures of fiscal resources for agency
systems (CIA SAFE and DIA ADISS); and the Director of the Office
of Manpower and Budget stated that the Intelligence Community
should develop a coordinated approach to the development of com-
puterized data bases that maximizes the rapid and free flow of
information vital to the quality and timeliness of the intelli-
gence product and minimizes the duplication in both data files
and ADP equipment.

1.4   More specifically, the SSCI requested that DCI prepare a
comprehensive report and long-range plan for coordinated acqui-
sition and utilization of IC ADP resources by November 1977.
Types of detailed information requested include trend data and
analysis of ADP costs from FY 70 - 79 by agency; identification
and description of computer assets and use; near-term replace-
ments or upgrades; identification of data files and interagency
exchange; projected major problems, priorities and new initia-
tives, and a broad organizational plan directed at improving
coordination of ADP hardware acquisition, software and data base
development, and interagency data base access. Efforts are cur-
rently underway in IC Staff and DoD to generate inputs for the
DCI response. (As an independent observation, it is believed
that the Information Handling Division of the IC Staff which is
responsible for the DCI response, including development of a
Community-wide plan, is totally understaffed for responsibilities
of this magnitude at only four persons.)

OBJECTIVES AND SCOPE

1.5   The objectives of this study are to identify areas of com-
monality in present or contemplated Intelligence Community ADP
utilization and potential avenues for avoiding or eliminating
duplication, as inputs for future planning.

1.6   The scope of the project was intentionally broad to incor-
porate the Community as a whole with the depth limited to what
might be accomplished with about 1 man-month of research effort.
Hence the emphasis was on developing an overview of Community
ADP usage, rather than in-depth analyses of specific problem
areas. The approach used to gather information for this report
involved reviewing written material and interviewing individuals
within the Community.

3

CONTENTS

1.7   The next section of the report reviews user needs and com-
monality between ADP systems.   Section III discusses some alter-
native concepts for data base management systems, and the last
section examines some relevant issues for achieving a Community-
wide information system.

II. USER NEEDS AND COMMONALITY

MARKET

2.1   The rapid growth of the Intelligence Community has contrib-
uted to the duplicative and nonstandardized nature of ADP acti-STATINTL
ties within the Community. 1/ The total fiscal funding for ADP

search and experimentation. 2/

2.2   The volume of available information within the Community
is rapidly increasing. Advanced collection systems have expo-
nentially increased the availability of information. To effec-
tively handle this information, technology must be exploited to
ensure the analyst can access, extract, manipulate and output
data requested in a timely manner. The Defense Communication
Agency has developed a projection for the level of transmission
of data on AUTODIN II. This projection, displayed in Figure 2.1,
indicates the magnitude of the increasing exchange of Community
information--a fifty-fold increase in the period '72 to '76, and

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1/ The number of intelligence organizations has increased from
    3 (FBI, Army's G-2, and Office of Naval Intelligence) in 1941
    to over 20 today.

2/ The Information Handling Committee's budget used for Com-
    munity planning, research, and experimentation is less than
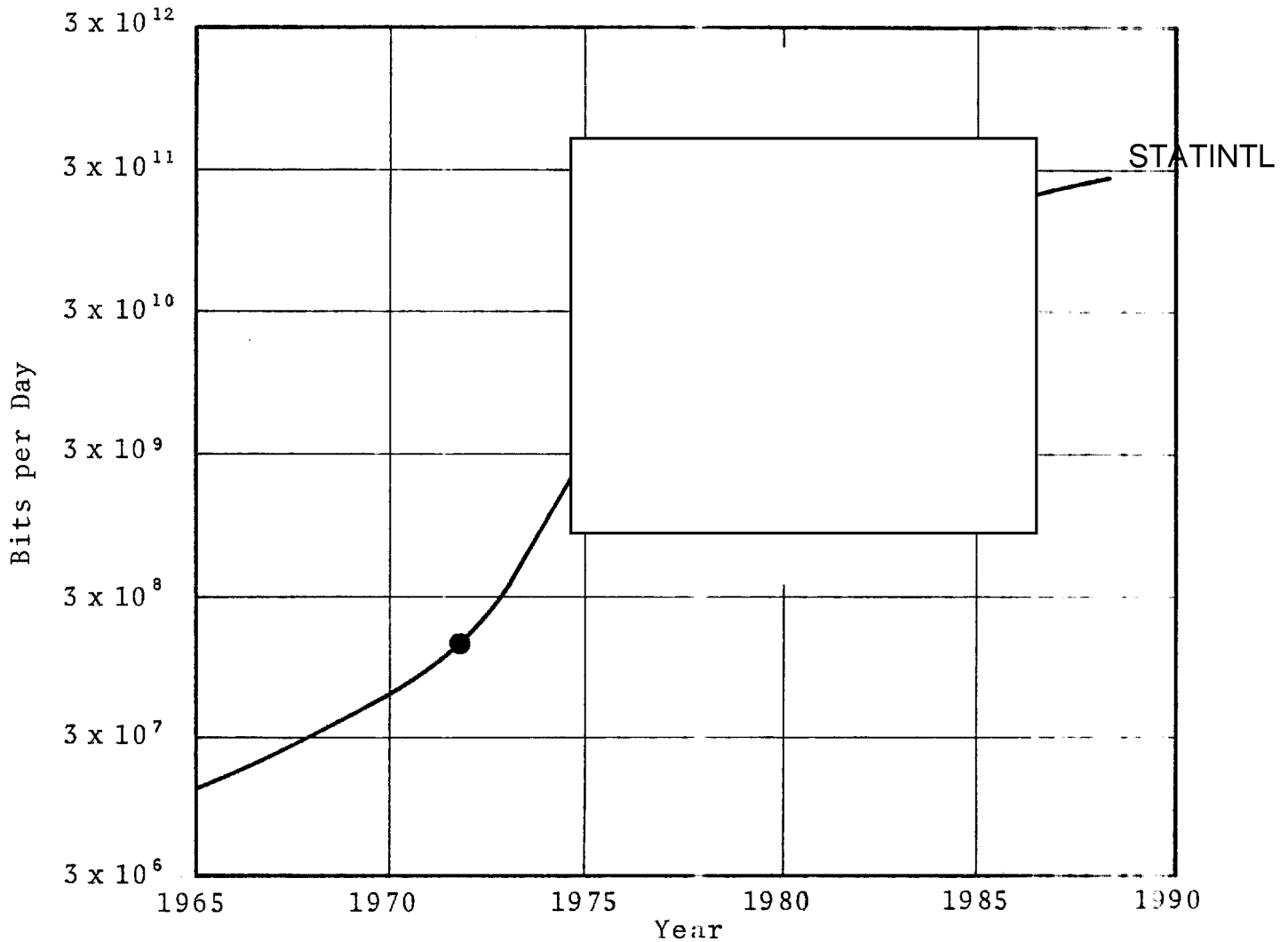
5

FIGURE 2.1

PROJECTED DAILY DEFENSE COMMUNICATION SUPPORT
FOR DATA TRAFFIC*

25X1A

AUTODIN II," Proceedings of Department
of Defense Intelligence Information System Managers Conference,
23-30 September 1976.

another twenty-fold jump by 1984, with accompanying growth in the numbers of terminals and computers.

ADP SOFTWARE SYSTEM COMMONALITY

2.3   Categories of software systems were examined to identify a select group of ADP software systems with commonality among Community organizations. This cursory look at systems with duplicative characteristics centered around systems with characteristics of data-base-management-systems (DBMS). Table 2.1 lists systems that were identified and categorized according to: collection systems (of which only imagery systems were reviewed); communications systems; processing systems; and production systems. The processing and production categories contained the systems with data-base-management-like characteristics.

2.4   Because of satellite costs and the relatively short time frame during which computerized imagery has existed, the imagery collection systems have evolved, for the most part, to fulfill specific Community needs. Communication systems (networks) already involve a large number of Community users. Table 2.2 provides a brief description of imagery collection and communications systems.

2.5   A more suitable target for this analysis is the proliferation of similar data base management systems within the processing and production categories. Table 2.3 provides a brief description of systems that are in the processing and production categories that potentially possess duplicative characteristics. While this list may include all types of systems, it probably represents only a fraction of the total number of systems.

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DBMS USER REQUIREMENTS

2.6   By reviewing system literature and documentation, a list
of user requirements partly common to these DBMS systems was
constructed. This list, with refinement, could be used to iden-
tify the characteristics of a standard Community DBMS. If stan-
dard DBMS's could be developed or adapted to fulfill user re-
quirements, potential savings would result by not proliferating
new systems. Table 2.4 contains a description of user functicnal
requirements, summarizing the capabilities provided by all of the
systems described in Table 2.3.

TABLE 2.4

USER FUNCTIONAL REQUIREMENTS

DATA MANIPULATION

- Search (indexed or free text)
- Retrieve (browse, keyword, text, content analysis)
- Hold
- Edit
- Output
- Print
- Alert

FILE SUPPORT FUNCTIONS

- Maintain (create, change, delete, replace, add)
- Compose (page, scroll, insert, change, delete, move, print)
- Storage, retrieval, and execution of past search strategies

COMPUTATIONAL FUNCTIONS

- Unique processing functions, simulation languages, APL, LISP, FORTRAN
- Statistical functions
- Curve fitting
- Mensuration and isometrics
- Models (heuristic, econometric, simulation)

COMMUNICATIONS FUNCTIONS

- Route (files and messages)
- Alert

USER AIDS

- Computer aided instruction
- Help function
- Diagnostics and error messages

13

III. SOME ALTERNATIVE DATA BASE MANAGEMENT
SYSTEM CONCEPTS

STANDARD DBMS

3.1 SAFE of the CIA and ADISS of the DIA are two systems being planned that are currently receiving major attention and discussion. From the relevant literature prepared for these two systems (although ADISS does not have user requirements completely defined), it appears that the two systems have a number of standard DBMS characteristics. This is alarming since several other systems, identified in Table 2.3, also have standard DBMS characteristics, and the table contains only a small number of highly visible DBMS systems. The COINS Project Office estimates that there are more than 30 DBMS-like systems operational in the Community today. Many of these systems are "home-grown" and will eventually come up for replacement as the state-of-the-art advances.

3.2 The issue then becomes obvious. First, does the Community need all of these DBMS systems, and second, can a Community standard be developed or adapted and implemented? It is believed that the Community does not need all of these different DBMS systems. Organizations typically argue that their applications are unique--when in fact they are not. The feasibility of a Community standard for a DBMS or a set of DBMS systems is worthwhile investigating.

3.3 The Department of Commerce has on several occasions sponsored a Conference of Data Systems Language (CODASYL) and this

organization has been active in the development of a common Data
Description Language. Before additional retrieval languages are
developed within the Community and the magnitude of the ADP com-
monality/multiple language problem increases, the adaptation of
CODASYL-like standards should be investigated.

3.4   Ten years ago there were only a handful of specialized
retrieval languages, usually only suited for one type of hard-
ware. Today there are many "good" data base management systems
and retrieval languages. Before another DBMS system like SAFE
or ADISS is developed, "off-the-shelf" DBMS systems should be
investigated. There may be a significant opportunity to reduce
costs by building on these languages and modifying only part of
the existing larger DBMS systems. In developing or adapting new
DBMS systems, it is clear that the Community does not need the
following:

- Unique, inflexible and application-oriented
  data base systems that are limited to nar-
  row functional use

- Procedures that are oriented toward ADP-
  inclined personnel

- Language not optimally designed for non-
  ADP-trained analysts

- Unique DBMS applicable only to one or two
  types of hardware.

ALTERNATIVE SYSTEM CONCEPTS

3.5   Some alternative conceptual designs for both the networking
of the hardware and the software interface are examined briefly
below. Axiomatic to this investigation is the belief that a

"single united communications network" and a "common language to access information" has the potential of contributing significantly to Community efficiency and effectiveness.

Network Alternatives

3.6   There are at least three network alternatives that should be considered, AUTODIN II, COINS, and IDHSC. A comprehensive evaluation of these three network alternatives is beyond the scope of this discussion, but the following summarizes status and capabilities.

- AUTODIN II. Time estimates place the operation of this network in the CY 82-84 time frame. The network will continue to be supported by Defense Communication Agency (DCA) when it is operational. Since this network is 6 to 8 yr from estimated completion, we can only consider this alternative for the future. However, current design compatibility should be established to ensure that AUTODIN II can be used when it becomes operational.

- COINS. The COINS I network is presently operational, while COINS II is currently being tested. COINS II will use the communication technology developed in the ARPA network, which could provide for secure communication on common carrier lines. COINS has made tremendous strides in providing intelligence analysts with a means to transfer and communicate information on a world-wide basis by linking to IDHSC. A wealth of experience exists both in the knowlege of

technical staff and the management staff.
The COINS Project Management Office (PMO)
is impressive in its forethought, experi-
mentation, and thorough investigation of
alternatives.

- IDHSC. The Intelligence Data Handling Sys-
tem Communication or the Worldwide Intelli-
gence Communications System (WICS) provides
DODIIS and COINS users with worldwide com-
munications. This DIA sponsored network
currently supports DIAOLS (DIA's data base
management system). COINS and WICS II have
been coordinated on a technical basis, but
there are still major incompatibilities in
the communication technology used by each.
One problem claimed by IDHSC to have been
resolved is the massive interfacing required
with CIA, NSA, State, etc.

3.7 The two alternative network technologies for near-term use
appear to be COINS and IDHSC, since the time estimate for AUTO-
DIN II operation is CY 82-84. From this limited analysis,
COINS II technology appears the most promising candidate for a
near-term solution to a single communication network, if the
COINS II tests are successful. The duplicative characteristics
of COINS and IDHSC require that both be carefully evaluated to
ascertain whether both networks are justified.

Multiple Language Problem

3.8 Alternative conceptual system (hardware and software) de
signs can be identified regardless of the decision to use COINS,
IDHSC, or some other third undetermined network alternative.

But the experience and "lessons learned" in COINS and IDHSC should be used as a basis for long-term improvements in information handling and processing.

3.9 The changing economics of hardware, the outlook for data transmission, and the large volume of data contained within the worldwide intelligence community combine to suggest distributed system architecture. Distributed data base systems are attractive where data are generated at several locations and are needed there for further processing, yet some applications require data stored at other locations as well. Distributed data base systems provide the ability for parts of Community data to be managed by several processors and provide the analyst with the ability to view data from a single location and not be concerned about the geographical location of the data. COINS II and IDHSC are being designed using the distributed data base concept. Figure 3.1 conceptually displays the COINS hardware network.

3.10 There are technical problems associated with distributed systems that may be significant ("lockout" and "deadlock") and these issues will require a detailed knowledge of the hardware at each system node. Using the distributed data base concept, a few alternatives are identified below as means for establishing a common language to access information.

3.11 The multiple language problems currently facing COINS II or the DODIIS/IDHSC network are displayed in Figure 3.2. A user enters his information requests/commands via a computer terminal. That terminal is connected to computer hardware at location A. If the data requested is resident at location "A," then DBMS I is used to access the data files. But, if the user wants to access files at location "B,", then DBMS II must be used to access data files. This multiple language problem is compounded each

19
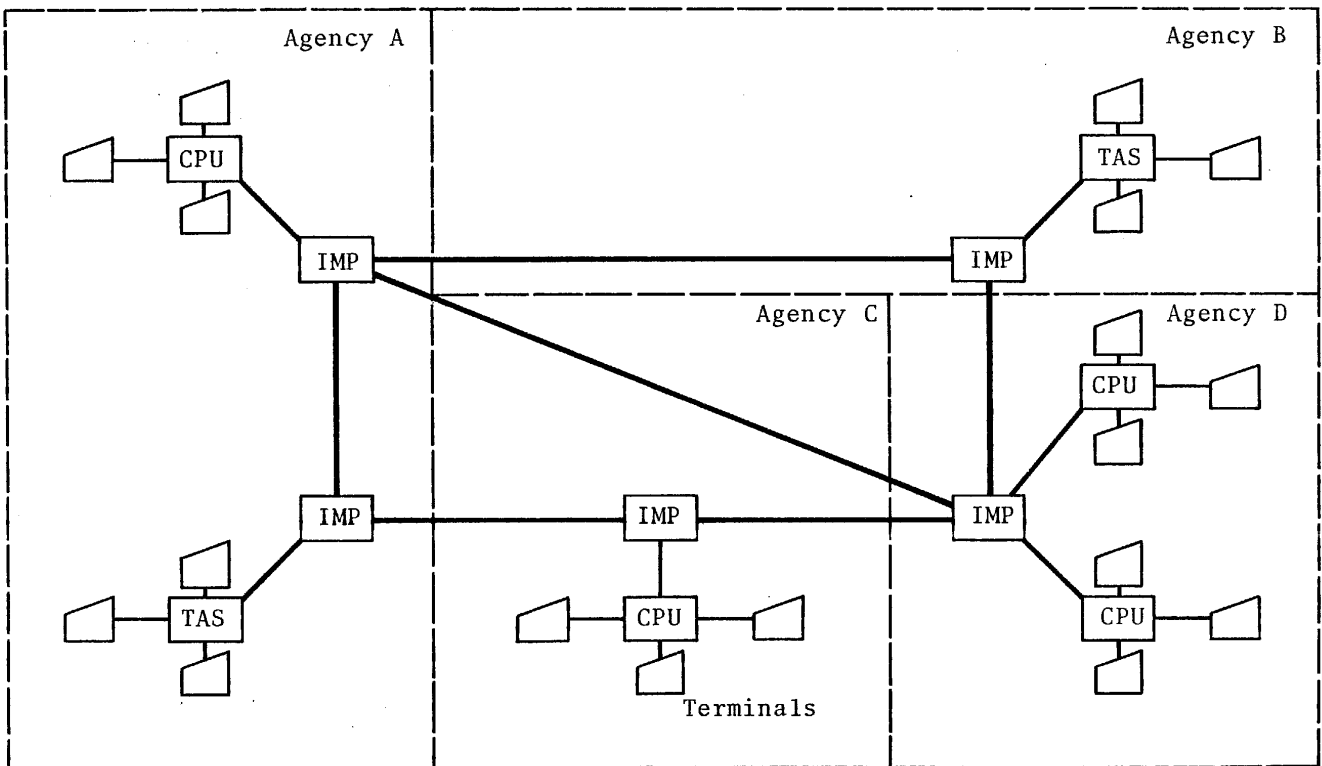
TAS = Terminal Access System
IMP = Interface Message Processor
CPU = Central Processing Unit

FIGURE 3-1

COMMUNITY ON-LINE INTELLIGENCE SYSTEM (COINS II)
DISTRIBUTED ARPA-TYPE NETWORK

time a new node is added with a different language (some agen-
cies have multiple languages).

Alternative 1:   Standard DBMS

3.12   One alternative for solving this problem is to replace all
data base management languages with a Community standard DBMS
language.   Figure 3.3 displays a conceptual view of this alterna-
tive.

3.13   The advantages and disadvantages of this approach are
listed below.

Advantages	Disadvantages
1. Standard DBMS	1. Costly solution
2. Single language	2. Long conversion time likely
3. File sharing and processing possible	3. Drain on personnel resources
	4. Bound to one DBMS architecture
	5. Major impact on users

Alternative 2:   Centralize Community Files

3.14   Another alternative for solving this problem is to central-
ize all Community files at one node of the network (probably us-
ing current hardware).   Figure 3.4 displays a conceptual view of
this alternative, whose advantages and disadvantages are described
below.

Advantages	Disadvantages
1. Community standard DBMS	1. Provide single failure point
2. Maximum of two languages	2. Duplicate files
3. Centralized management control	3. Added file conversion and maintenance
	4. Large file size

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21

NODE
HARDWARE
A

USER
TERMINAL

IMP*

NETWORK

IMP*

NODE
HARDWARE
B

CURRENT
DBMS I

CURRENT
DBMS II

NODE A
DATA FILES

NODE B
DATA FILES
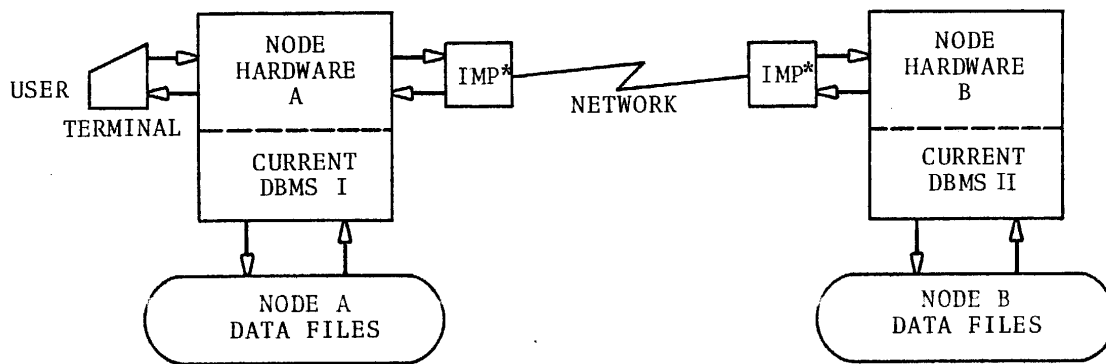
* IMP = Interface Message Processor

FIGURE 3.2
USE OF MULTIPLE LANGUAGES WITH COINS II

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22

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                ┌──────────────┐                                    ┌──────────────┐
          ┌──►  │    NODE       │    ┌──────┐          ┌──────┐      │    NODE       │
  USER    │     │  HARDWARE     │──► │ IMP* │          │ IMP* │ ──►  │  HARDWARE     │
 TERMINAL │     │     A         │◄── └──────┘  NETWORK  └──────┘ ◄── │     B         │
          │     │ - - - - - - - │                                    │ - - - - - - - │
          │     │  STANDARD     │                                    │  STANDARD     │
          │     │   DBMS        │                                    │   DBMS        │
                └──────────────┘                                    └──────────────┘
                ┌──────────────┐                                    ┌──────────────┐
                │   NODE A      │                                    │   NODE B      │
                │ DATA FILES    │                                    │ DATA FILES    │
                └──────────────┘                                    └──────────────┘
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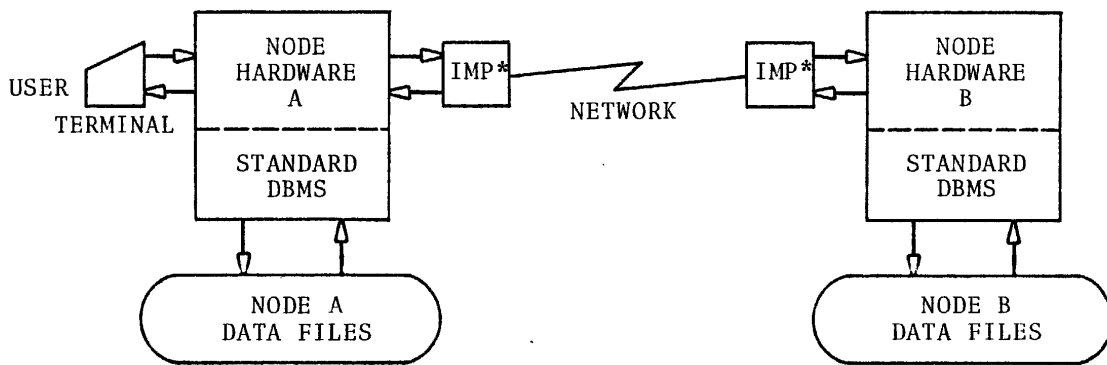
* IMP = Interface Message Processor

FIGURE 3.3

ALTERNATIVE 1: STANDARD DBMS

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NODE
HARDWARE
A
USER

TERMINAL

NODE
DBMS

IMP*

NETWORK

IMP*

HARDWARE
SERVING
COMMUNITY

DBMS

NODE A
DATA FILES

COMMUNITY
DATA FILES

23
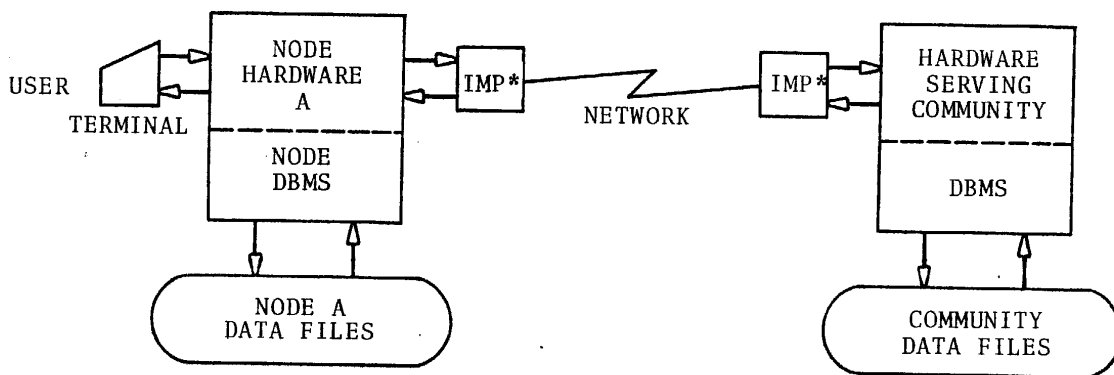
* IMP = Interface Message Processor

FIGURE 3.4

ALTERNATIVE 2: CENTRALIZE COMMUNITY FILES

Alternative 3: Multiple Language Translator

3.15 A third alternative for solving the multiple language prob-
lem is to develop a multiple language translator. This alterna-
tive, displayed in Figure 3.5, would allow the user to use cur-
rent node DBMS language as the standard Community language. Ad-
vantages and disadvantages are described below.

| Advantages	Disadvantages
1. Minimal impact on users	1. Needs multiple language transla-tion packages (potential risk?)
2. Single Community user language	2. Difficult to maintain individ-ual translation packages for each vendor
3. Minimal conversion costs, if no existing files need to be converted	3. Additional personnel required to maintain translation pack-ages

Alternative 4: Multiple Language Translator and Standard DBMS

3.16 This is the last alternative that is presented, although a
continuum of alternatives is possible. $\underline{1}/$ Essentially, there is
a combination of alternatives 1 and 3, which seems particularly
relevant in light of the recent SAFE/ADISS interest and discus-
sion. As part of the development of SAFE/ADISS, a user language
must be defined. The characteristics and attributes of the defi-
nition of this language could be used to create a multiple lan-

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$\underline{1}/$ For a more detailed description of alternatives to the
multiple language problem (without regard to SAFE/ADISS),
see a "Study of Multi-Language Problems in COINS," May
1975,

24

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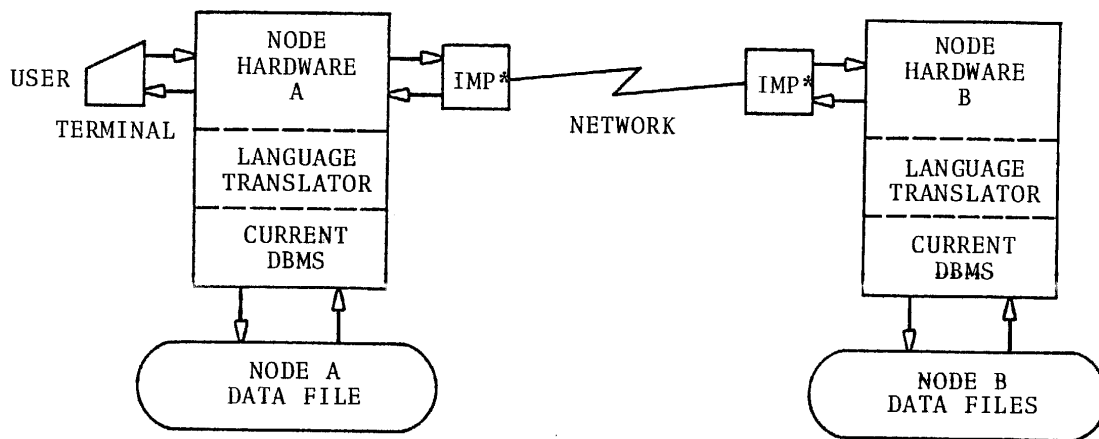
* IMP = Interface Message Processor

FIGURE 3.5

ALTERNATIVE 3. MULTIPLE LANGUAGE TRANSLATOR

guage translation package. The actual development of SAFE/ADISS
could be directed to the needs of the entire Community and would
result in the development of a standard DBMS.

3.17 The advantages and disadvantages of this approach are
described below.

Advantages	Disadvantages
1. Single Community language	1. Multiple language translation packages must be developed
2. Community standard DBMS that could be phased in over time and serve as DBMS for SAFE/ADISS	2. Maintenance would be difficult for translation packages, but would phase out over time
3. Minimal conversion costs	3. Additional personnel may be required to maintain translation packages
4. Minimal impact on users	4. Bound to one DBMS architecture
5. File sharing and processing possible	5. Requires strong, central management control

Summary

3.18 The selection of an approach to solve the multiple language
and DBMS problem presents a challenge in achieving a reasonable
balance between the expected user benefits and associated costs.
Therefore, to perform a comprehensive evaluation of the alter-
natives presented in this section or any others, the costs and
implementation schedule associated with each alternative must be
developed in detail. However, certain relevant observations can
be made. There are a large number of DBMS-like systems within
the Commuinity, and these systems will eventually come up for
replacement as the state-of-the-art advances. SAFE and ADISS
may well be part of what will be a continuing trend to upgrade
and replace obsolete "home grown" DBMS systems. As a result,
alternative 4 (Multiple Language Translator and a Standard DBMS)

appears to be an attractive compromise because this alternative
provides a means to move toward a Community standard while min-
imizing the impact of change, and eventually evolving toward a
standard. However, to refine this approach, in-depth cost/ben-
efit analyses should be performed for these and other possible
alternatives. This effort should identify and describe the spe-
cific characteristics of the DBMS system and resident hardware
as well as describe the costs and benefits associated with each
alternative.

IV. COMMUNITY-WIDE INFORMATION SYSTEMS

4.1   Community data, that is, intelligence data needed by more
than one organization, is a reality. The set of complex policies
and technical problems accompanying this reality must be deter-
mined to establish an efficient and effective manner by which to
communicate and transfer data within the Community. The concept
of Community data has been demonstrated in the Community On-line
Intelligence System (COINS), a Community test-bed system that
links NSA, CIA, DIA, NPIC, and State, and which can be accessed
by world-wide commands. This system currently provides service
for 9,000 queries per month on over 65 files. Also, the Depart-
ment of Defense Intelligence Information System (DODIIS), an
evolving DoD Community system, has demonstrated the concept of
Community data by providing for the exchange of information on
part of over 175 files contained within DODIIS. In fact, 86 bil-
lion characters of automated intelligence information (enough for
300 complete sets of Encyclopedia Britannica) are exchanged an-
nually within DODIIS alone. [1]/

4.2   Potential cost justification for Community information sys-
tems has been demonstrated by COINS. Over 100 million communica-
tion transmissions were saved annually in COINS by eliminating 13
NSA reports, most of which were daily or weekly publications.
However, this is only a small step in the cost savings that could
be realized by the Community. The fact that there are software
systems within the Community that have duplicative capabilities

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[1]/   High, Paul L., Jr., "DoD Automated Intelligence Flow," Pro-
ceedings of Department of Defense Intelligence Information
System Managers Conference, 26-30 September 1976.

and that fewer systems could potentially serve the Community
provides a basis for significant future cost savings.

MAJOR POLICY QUESTIONS

4.3   To lend perspective to the larger problem of coordinating
and integrating the ADP planning elements within the Community
for the development of a more accessible Community information
system, it is important to understand the areas in which policy
must be defined for Community ADP activities. For the purpose
of the overview, we have identified the following seven areas

- Shared data bases

- Multiple retrieval languages and data base
  management systems

- Data standards

- Communication network interfaces

- Training and user aids

- Research and experimentation

- Security

Table 4.1 describes specific issues and some alternative ap-
proaches associated with each area of major policy. Each of
these policy questions is complex and has been addressed to some
extent over the past several years by IHC and special subcommit-
tees and study groups. It is believed that to achieve signifi-
cant benefits of Community-wide efficiency and effectiveness via
commonality will require "reasonable" resolution of all of these
thorny policy (and related technical) questions.

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TABLE 4.1

OVERVIEW OF MAJOR POLICY QUESTIONS

Policy Areas	Specific Issues	Alternative Approaches
Shared data bases	Budget Responsibilities: What organization is responsible for budgeting for Community use of data files and validating the cost/benefit of Community data file?	• Host computer facility • Proponent of data base • Shared with users on a proportionate use basis • Information Handling Committee (IHC) • Community Council (new organization)
	Access & Control Responsibilities: What organization is responsible for ensuring authorized access?	• IC staff • IHC • Proponent of data base • Other group
	Quality & Timeliness of Data: What ensures the accuracy, quality and timeliness of the data?	• Proponent of data base • IHC • Community Council • Other group
Multiple Retrieval Languages & Data Base Management Systems (DBMS)	Community Standards: Should there be a Community standard for retrieval language or DBMS's?	• Single standard • Community guidelines • Multiple standards • No standard
	Maintenance Update & Modification: What organization is responsible for the maintenance required for operational use of these languages/DBMS's?	• Host computer facility • Community Council • Contractor(s) • DODIIS/COINS
	Multiple Language Translator: Can a multiple language translator be developed?	• No • For some languages • All languages
Data Element Standards	Necessity: Does the Community need data element standards?	• None • For selected areas • For historical and new data files • For new data files
	Policy: Who decides how much standardization?	• Individual agencies • IHC • Community Council

30

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TABLE 4.1 (Cont)

Policy Areas	Specific Issues	Alternative Approaches
Data Standards (cont)	Approach: Given that data standards are required, what approach should be used to create standards?	• Solve technically by developing a cross-walk file • Use a committee to identify data element standards • Use a contractor to propose data element standards • Create a new Community group (in a full-time capacity) to address data standards
	Budget Responsibilities: What organization is responsible for budgeting for Community data standards?	• IC staff • IHC • Others (e.g., Community Council)
Communications Network Interfaces	Management Control: What organization is responsible for defining line protocols and gateway interfaces, and ensuring exchange of technology?	• DCA • IHC • IC staff • Committee of Host Agencies
	Maintenance: What organization is responsible for maintaining interface software?	• Host agencies • Contractors • Interagency working group • IHC
Training and User Aids	Responsibilities: What organization has the responsibility for training Community users?	• IC staff • DODIIS/COINS • IHC • Others (e.g., Info Science Center, CIA) • File sponsors
Experimentation and Research	Management Responsibilities: What organization(s) has responsibility for coordinating & directing over-all experimentation & research?	• IHC • Community Council • COINS • IR&D Council • ARPA • IC staff
	Budgetary Responsibilities: What organization(s) has responsibility for budgeting for Community experimentation and research?	• All agencies • Selected agencies • IC staff • Community Council • IHC • IR&D Council

31

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TABLE 4.1 (Cont)

Policy Areas	Specific Issues	Alternative Approaches
Security	Authoritative Source: Current refer-ence material on security for ADP is vague and inadequate. What organization is responsible for developing an authoritative refer-ence that defines security require-ments for a transmission over a network and data stored in computer?	• IHC • IC staff • DCA • Individual agencies • Other Community group
	Inspection & Enforcement: What orga-nizational group is responsible for investigating ADP hardware and soft-ware (i.e., data base protection, valid "need-to-know" operating system security, etc.)?	• IHC • IC staff • Individual agencies • Technical accreditation group
	Research & Experimentation: What organization is responsible for budgeting for research and experi-mentation and is tasked to resolve new problems brought on by techno-logical developments?	• IHC • IC staff • DCA • Individual agencies • Other Community groups
	Sharing Community Data: What organi-zational group is responsible for threat definition, risk clarifica-tion, and other security issues associated with the sharing of Community data?	• IC staff • IHC • Other Community group • Individual agencies

32

4.4   The list of policy issues compresses to the following basic
questions in each area:

Policy Area	Issues
● Shared Data Bases--	What organization(s) has the responsibility for Budgeting, ensuring proper access and control, and verifying the quality and timeliness of information contained within data bases; what is to be shared and with whom?
● Multiple Retrieval Languages and Data Base Management Systems--	Should there be a Community standard language, since this is a major interface problem to the analysts? Is it feasible to develop and maintain a language translator? What organization is responsible for maintenance required for operational use of these retrieval systems?
● Data Standards--	Does the Community need standards and is the Community willing to allocate the resources required? If so, what approach should be used (solve technically, use Committee, use contractors, use in-house personnel)?
● Communications Network Interfaces--	What organization has management responsibility for defining communication standards (line protocols; gateway interfaces, etc.) and evaluating competing network technologies?
● Training and User Aids--	What organization is responsible for training Community users and what is the cost to the Community, and is present investment adequate?
● Experimentation and Research--	What organization has responsibility for coordinating overall

experimentation and research
and avoiding duplication? By
what means are the results
passed to the Community?

- Security--   What organization is responsi-
ble for developing an authori-
tative reference on ADP secur-
ity? How can an individual
organization's security proced-
ures be effectively inspected
and accredited? What are the
multi-level compartmentation
problems associated with ADP
security?

PLANNING FOR A COMMUNITY-WIDE SYSTEM

4.5   Development of a Community-wide system is a complex process
involving centralized direction and interagency coordination and
planning. Some of the steps which converge on a master plan for
developing such a system are listed below. What is contained in
these steps, and how they relate, is illustrated in the suggested
flow diagram, or "plan for the plan," shown in Figure 4.1.

- Identify current information system capa-
bilities and existing hardware configura-
tions

- Evaluate current information handling
capabilities

- Study present organization of Community
ADP elements

- Improve management control of ADP elements
in the Community

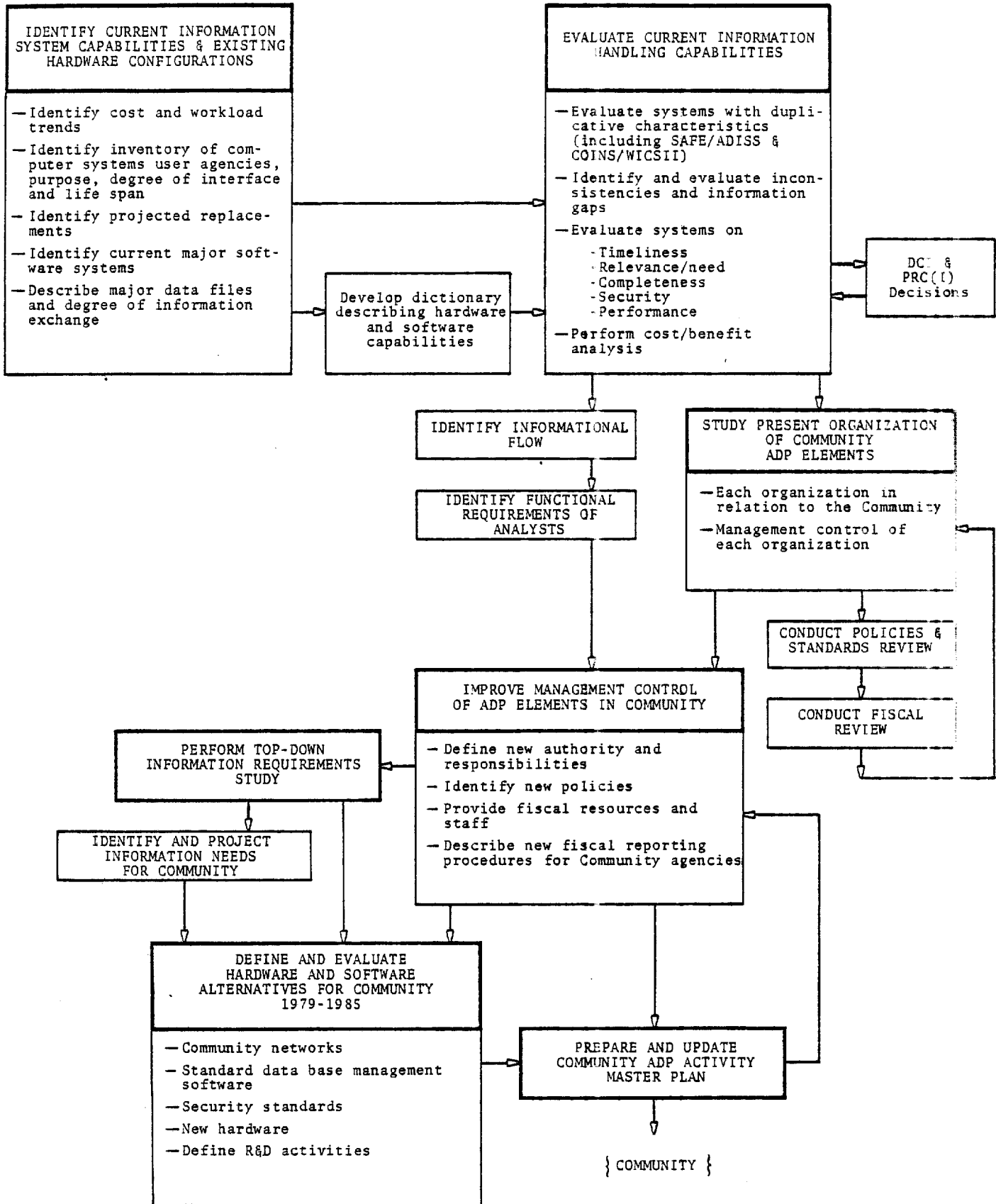- Perform top-down information requirements
study

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FIGURE 4.1

PLANNING FOR A COMMUNITY-WIDE INFORMATION SYSTEM

35

- Define and evaluate Community hardware and software alternatives

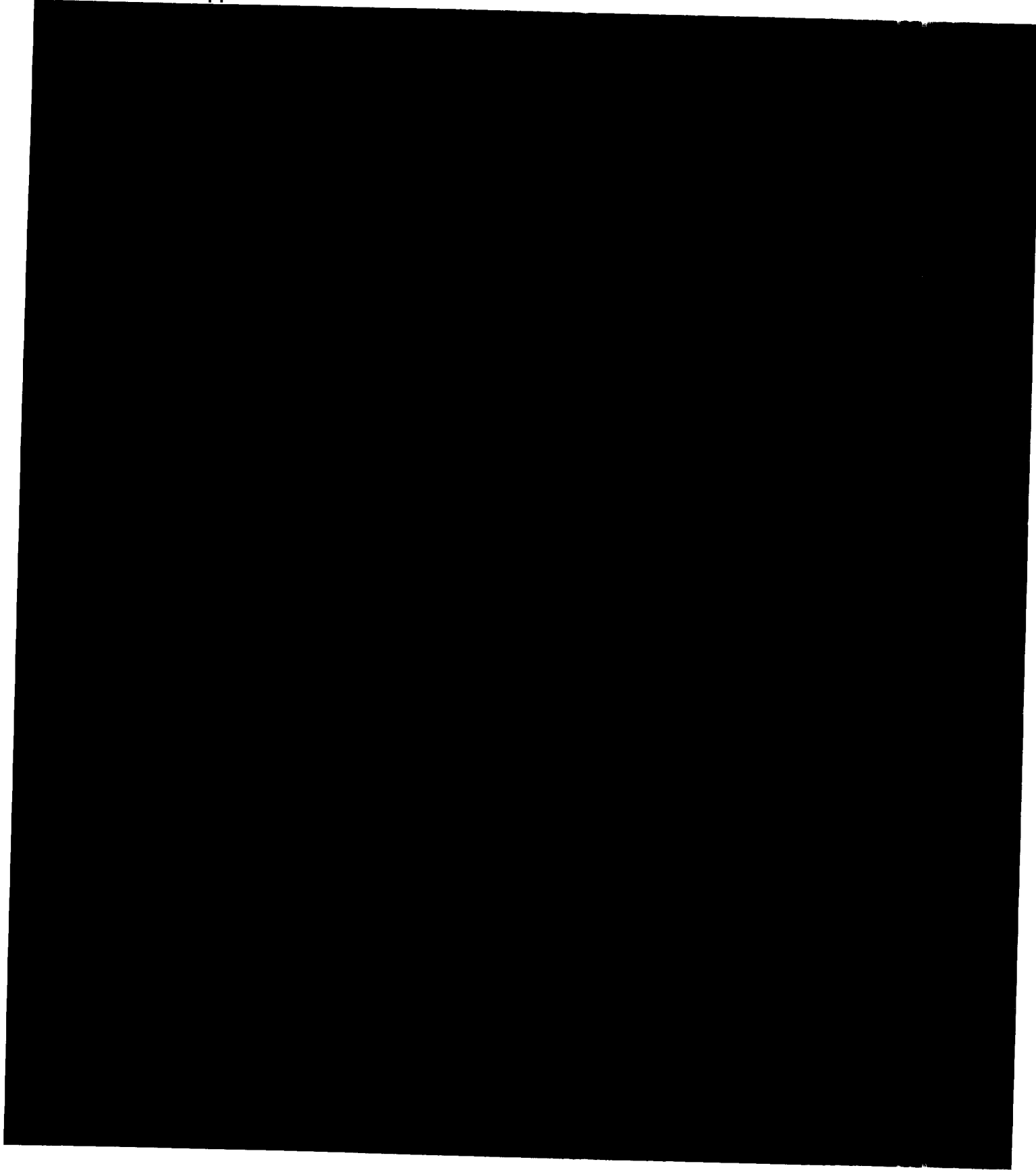- Prepare and update Community ADP master plan.

IMPLEMENTATION

4.6   Currently, the DCI Intelligence Information Handling Committee is charged with the responsibility to serve as the catalyst for bringing about Community-wide ADP planning and implementation.   The available funds, manpower, and the expertise required to perform this crucial responsibility are not adequate to allow the IHC to effectively execute this stated responsibility.   Further, the Committee concept has demonstrated little progress in addressing the most basic Community-wide ADP problems (i.e., data standards, security issues, etc.).

4.7   To provide for future integration and planning efforts, it would be valuable to identify a central focal point to coordinate the development of new hardware and software systems to reduce redundancies and to maximize utility across the Community.   At the same time, reporting and budgeting policies need to be changed to identify allocations of ADP resources, beyond the limited accountability found today.

4.8   One approach would be to dissolve the IHC and to create a new "Office" with line responsibilities.   This office could reside within the IC Staff, or perhaps be answerable to the DCI directly, since ADP integration efforts are so fundamental to Community-wide integration as a whole.   This office would be charged with ADP Community-wide planning and implementation and be the central focal point within the Community for the coordination of new major software systems, reducing the possibility

of major system redundancy. As part of its responsibilities, the office would have budgetary authority over ADP activities and related Community R&D programs. This new office would resolve the limited and questionable accountability for ADP resource expenditure by developing and implementing new reporting and budgetary policies.

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