U S L / D B M S N A S A / R E C O N

W O R K I N G P A P E R S E R I E S

Report Number

DBMS.NASA/RECON-13

The USL/DBMS NASA/RECON Working Paper Series contains a collection of reports representing results of activities being conducted by the Computer Science Department of the University of Southwestern Louisiana pursuant to the specifications of National Aeronautics and Space Administration Contract Number NASW-3846. The work on this contract is being performed jointly by the University of Southwestern Louisiana and Southern University.

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An Innovative, Multidisciplinary Educational Program in Interactive Information Storage and Retrieval

A Thesis
Presented to
The Graduate Faculty of
The University of Southwestern Louisiana

by
Mary C. Gallagher
January 1985

OVERVIEW OF PRESENTATION

1. INTRODUCTION
   - 1.1 Background
   - 1.2 Thesis Statement
2. REVIEW OF THE LITERATURE
   - 2.1 Definitions
   - 2.2 Survey of Projects
     - 2.2.1 The Enterprise Milieu
     - 2.2.2 The Educational Milieu
3. CONCEPTUAL FRAMEWORK AND METHODOLOGY
   - 3.1 Research Objectives
   - 3.2 Critical Considerations
   - 3.3 Management Phases of the Research
4. NEEDS ANALYSIS
   - 4.1 Questionnaire Development
   - 4.2 Results Interpretation and Implications
5. COURSE DEVELOPMENT PHASE
   - 5.1 Overall Course Development
   - 5.2 Course Deliverables Development

SOURCES OF LEARNING

Database Processors

- Training
- Workshops
- System Specific
- Hands-On

Schools

- Education
- Librarians
- Limited Usage
- Fragmentary Development

LEARNING AIDS

Conventional

- Syllabi
- Workbooks
- Bibliographies

Online

- Simulators
- Emulators
- Tutorials
- Local Database Systems

School	Search Package	Mode of Use	Database(s)
Aberdeen	IRSINT	online	DINDEX-3000 clippings on communication ARPAM-5500 pamphlets on architecture
Birmingham	FIND-2	online	Records input by students
Brighton	BIRP	batch/online	500 MARC record
Leeds	FAMULUS	batch	Records input by students
Liverpool	FIND-2	batch/online	Records input by students
Loughborough	SIMULATOR	online	40 items on librarianship
Manchester	FIND-2	batch/online	Records input by students
Newcastle	(unnamed)	online	1000 items on social work
Sheffield	FAMULUS	batch	Records input by students

Local Databases at UK Library Schools

Skill Level	Number of Trainees	Average Hours on TRAINER
6	10	9.3
5	27	7.3
4	13	4.7
3	6	4.7
2	3	3.5
1	2	6.3

TRAINER Skills by Online Time

Age Group	Number of Trainees	Average Skill Level	Average Hours on TRAINER
40-49	9	4.2	10.9
25-39	34	3.4	6.3
18-25	18	3.1	4.4

TRAINER Skills by Age Group

Typing Skill	Number of Trainees	Average Skill Level	Average Hours on TRAINER
0	15	3.0	8.8
1	26	3.5	5.8
2	17	3.5	5.76
3	3	4.4	5.0

TRAINER Skills by Typing Skills

Language Group	Number of Trainees	Average Skill Level	Average Hours on TRAINER
English	42	3.6	7.7
Non-English	19	3.3	8.0

TRAINER Skills by Language Group

PROJECT OBJECTIVES

Set of Courses

Hands-on Usage

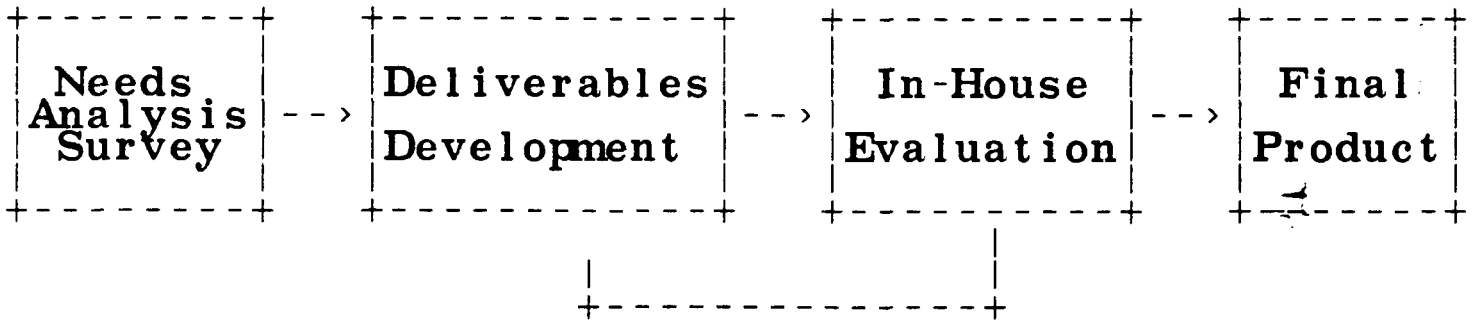
Science and Engineering Students

Transportable Courses

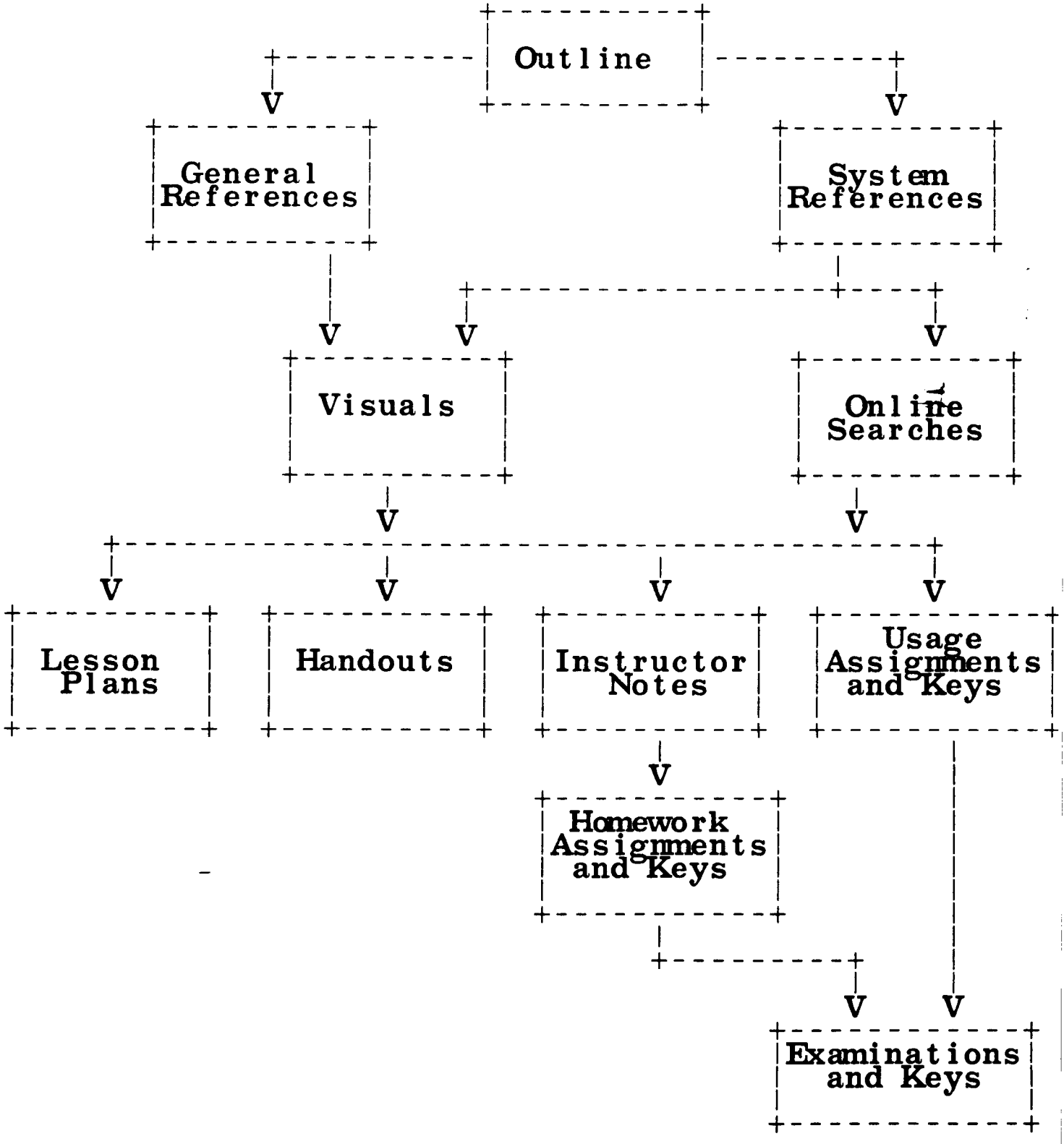
MANAGEMENT PHASES OF NASA CONTRACT

A. Needs Analysis
B. Course Development
C. Pilot Course Administration
D. Pilot Evaluation
E. Development of Distribution Plan
F. Implementation of Distribution Plan
G. Conduct of Regional Seminars
H. Conduct of On-Site Seminars
I. Coordination of Request Processing and Information Dissemination
J. Course State-of-the-Art Enhancements
K. Institutional Surveys and Evaluations
L. Graduated Student Surveys and Evaluations
M. Periodic Statistical Summary Reporting

OVERALL COURSE DEVELOPMENT DIAGRAM



COURSE DELIVERABLES DEVELOPMENT DIAGRAM



CLASS NO. 4

SUBJECT User Categorization

TOPICS Rationale, Categorization Parameters, and Category Definitions

TIME 1 hour

MAJOR OBJECTIVE(S): To justify multiple user categories and define the different types of users of information systems.

SPECIFIC OBJECTIVES:

1. The learner will understand that information systems must serve the needs of a heterogeneous population.
2. The learner will be able to identify and define different classes of users.

RESOURCE MATERIALS NEEDED:

1. Visuals

RECOMMENDED READINGS:

Information Retrieval Systems: Characteristics, Testing and Evaluation (1979) (chap 23) by Lancaster

Principles of Data-Base Management (1976) (chap 21) by James Martin.

OUTSTANDING ASSIGNMENTS: None.

ACTIVITIES:

--STUDENT ORIENTED--

1. Note-taking
2. Discussion

--INSTRUCTOR ORIENTED--

1. Foil presentation
2. Examples of different types of users

SUMMARY OF LESSON:

The lesson will discuss the different user requirements, the rationale behind these requirements, and the different functions of each user category.

FOCAL POINTS (test areas):

1. User requirements.

2. User functions.

3. User categories.

4. Needs of each category of users.

INSTRUCTOR'S NOTES

CATEGORY DEFINITIONS

*** Data Base Administrators

{{ One per Data Base }}

*** Maintain Individual Data Base

*** Provide Structure and Information Content of the Data Base

*** Provide Security and Integrity Controls for the Information in the Data Base

*** Provide Liaison Between End Users and Application Programmers

*** Monitor and Evaluate Data Base Performance

*** Provide Feedback to the System Administrator

{{ For example, if changes are needed in the DBMS software, the DBA will refer to the System Administrator. Generally speaking, anything "outside" and "above" the DBA's authority is sent to the system administrator.

Thus, there exists a hierarchy of users }}

CATEGORY DEFINITIONS (cont'd)

{{ Two special categories of "End Users" will be described in the next foils: the Parametric Users and the Casual Users }}

***** Parametric Users**

{{ See next page }}

***** Invoke Pre-Defined Procedures**

{{ Using a menu-driven system }}

***** System-Initiated Dialogue**

{{User answers queries issued by the system }}

***** Input Information Requested by System**

***** System Function Invoked by Input**

***** Interact with a Data Base in a Routine Manner**

{{ The system is accessed in the very same way every time

INSTRUCTOR MANUAL ADDITION

Example

{{ The best example of a parametric user would be the user of an electronic bank teller. The user follows a menu which always leaves him some choice, including the choice to cancel his queries, and/or leave the system.

Some IS&R systems, such as Westlaw and Lexis - both designed for lawyers -, are built with the very same philosophy: that is, to free the user from the burden of learning and remembering query languages. Thus the instructions are clear and concise, while the keyboard used in accessing such systems hold some helpful keys such as:

HELP keys, NEXT PAGE keys, NEXT CLIENT keys, YES/NO keys ... }}

BASIC RECON TRAINING

1.A. Find the number of references to ACID RAIN in file collection D using the Thesaurus Term, the Title, the Abstract, and the Analytic Note.

*** D = 416 hits

B. Find same in file collection F(books) using the Thesaurus Term, the Title, the Sub(LC Indexing), and LT for ACID and RAIN (combined).

*** F = 57 hits

C. The same for file collection P.

*** P = 473 hits

2. Identify by Accession Number the document containing the definition of "Flying Peanut"?

*** 83A16400

3. Find Accession Number for NASA-TM-85141

*** 83N13147

4. Locate an energy document by Karen Gordon and Elizabeth Baccelli.

*** 83N13623

TEST III

6.3(K). What is meant by a "predefined output format?"

*****

A predefined output format refers to the appearance of the data retrieved by a search as presented to the user who requested the search. A predefined format means that the system defines the format by which the data will be displayed (i.e. spacing, line size, page size, etc.).

6.3(K). What is meant by "on-line output generation?"

By "offline output generation?"

****

Online output allows interaction on the user's terminal with the retrieved data.

Offline generation requires a request by a user for data which is output at a distant facility and sent to the user.

6.2(K). What index terms would you assign to any scientific document?

****

TITLE

KEY WORDS

WORDS IN CHAPTER HEADING

8.1(C). Describe the measurement parameters included in user error and error recovery analysis.

****

There are three measurement parameters:

1) ERROR RATE: measures changes over time of the number of errors made by the user.

2) TYPE of ERROR

3) USE OF HELP COMMANDS

TRADITIONAL OBTRUSIVE USER MONITORING

8.2(K). Define Recall.

* * *

Recall measures the ability to retrieve from the system as much relevant information as possible.

8.2(K). Define Precision.

* * *

Precision measures the ability to retrieve from the system only the desired information.

8.2(AP). Let the number of relevant documents retrieved be 10, and the total number of documents in the data base be 20. If the total number of documents actually retrieved is 15, find the Recall Ratio and the Precision Ratio.

* * *

Recall : 10/20 (50%) Precision: 10/15 (66.6%)

8.2(C). Describe at least three human factors to be considered in traditional obtrusive user monitoring.

* * *

1/ Human Behavior Characteristics (human behavior may change considerably under different circumstances)..

2/ Variability Control (Experiments to measure performances of different groups under different conditions require that the groups be selected in such a way that their overall characteristics are nearly identical).

3/ Legal and Moral Factors (The information collected can not be legally used without the permission of the subjects. The experimentor has the responsibility to protect the users' confidentiality).

4/ Impact on User Actions (The users interactions with the system may be inhibited if he believes his actions are identifiable).

COURSE DEVELOPMENT STATUS

Course Material Documentation Templates (Final)

Standards for Visuals Outlines (Final)

Standards for Visuals (Final)

Outline of Course Visuals (2nd Draft)

Course Visuals (1st Draft)

Lesson Plans (1st Draft)

Homework Assigmments with Answer Keys (2nd Draft)

Usage Assigmments with Answer Keys (1st Draft)

Instructor Notes (1st Draft)

Additional Support Handouts

Examinations with Answer Keys (1st Draft)

Bibliographies

MAJOR CATEGORIES OF ACCOMPLISHMENTS

Project Control

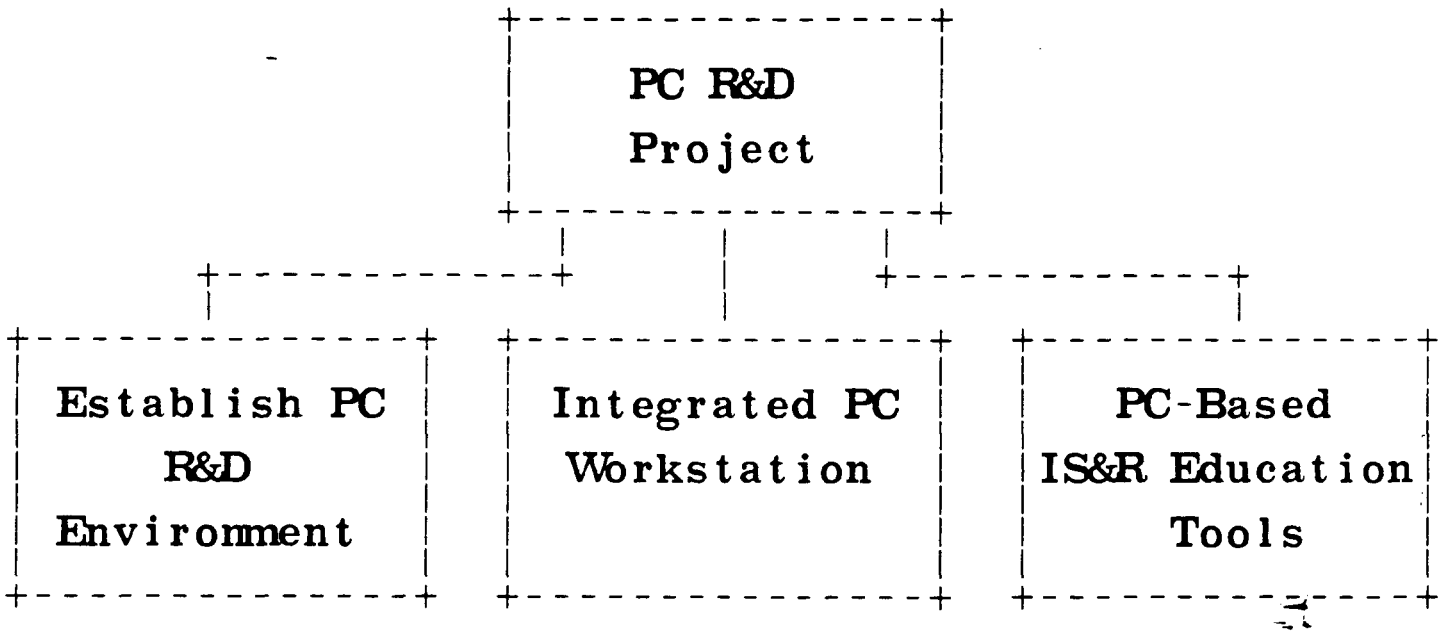
Needs Analysis

Project Working Paper Series

Course Development Working Paper Series

PC R&D Working Paper Series

Other Research Support



OBJECTIVES:

Continual Evaluation	Local Environment Interface	NASA/RECON Emulator
Develop Methods & Specifications	Remote Interface	IS&R Emulator Generator
Identify & Evaluate Projects	Distributed Interface	Interactive Presentation Development System
	Prototype PC Workstation	

Relationship Between PC R&D Goals

FUTURE OF IS&R SYSTEMS

Types of Systems
- Bibliographic
- Numerical
- Representational
- Referral

Pre-Processing
- Intelligent Interfaces

Post-Processing
- Knowledge Retrieval

STEPS IN WISDOM RETRIEVAL

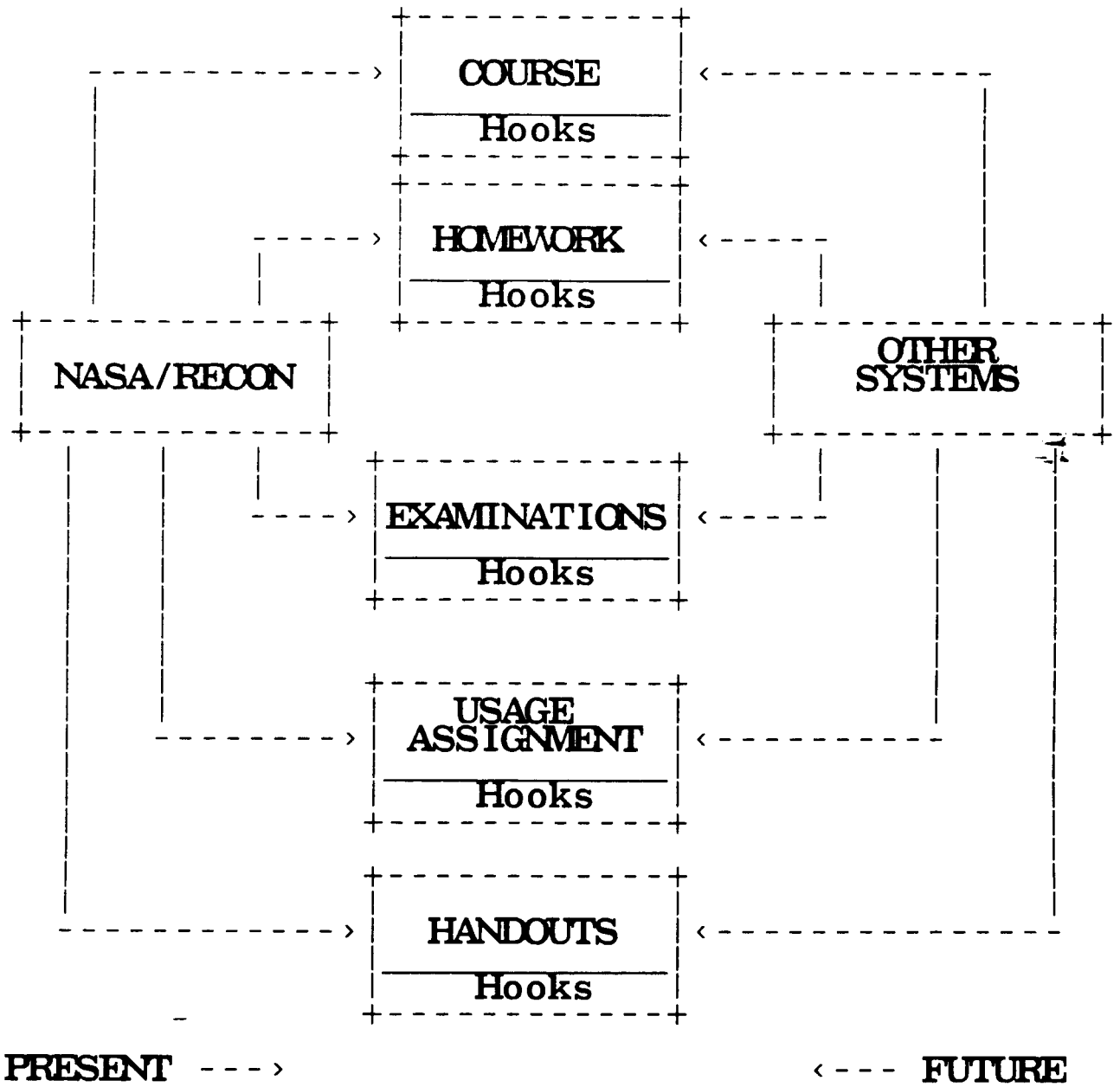
1. Choose and Contact Database
2. Choose Terms
3. Construct Query
4. Examine and Evaluate Results
5. Retrieve References
6. Locate Documents
7. Get Copies
8. Study Material
9. Assimilate Relevant Facts

FUTURE OF THE NASA/RECON EDUCATION PROJECT

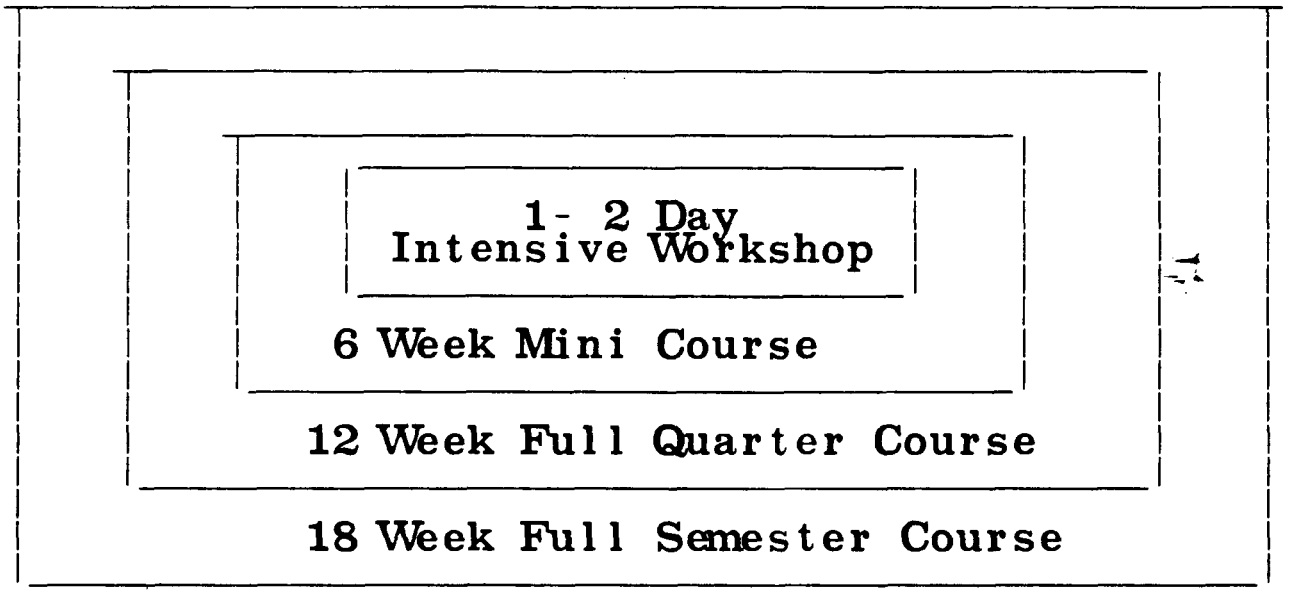
Short Term

- Define Additional Course Configurations
- Pilot Administration
- Pilot Evaluation
- Distribution Plan Development
- Additional Systems
- Additional Disciplines

SYSTEM INCORPORATION DIAGRAM



DEVELOPMENT PLAN FOR THE SET OF 4 COURSES



FUTURE OF THE NASA/RECON EDUCATION PROJECT

Long Term

- Distribution
- Evaluation
- Extensions
- Enhancements
- Non-Educational Institutions
- Request and Information Processing
- Result Reporting

CONCLUSIONS

End User Education

Co-ordinated Materials

- Complete
- Varied

Extensions

- IS&R Systems
- Disciplines

Enhancements

- Improvements
- Updates

Transportability

4.14

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15. Supplementary Notes

16. Abstract

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