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THE DESIGN OF PC/MISI, A PC-BASED
COMMON USER INTERFACE TO REMOTE
INFORMATION STORAGE AND RETRIEVAL SYSTEMS:
PRESENTATION VISUALS

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WORKING PAPER SERIES

**THE DESIGN OF PC/MISI, A PC-BASED
COMMON USER INTERFACE TO REMOTE
INFORMATION STORAGE AND RETRIEVAL SYSTEMS**

**A Thesis
Presented to
The Graduate Faculty of
The University of Southwestern Louisiana
In Partial Fulfillment of the
Requirements for the Degree
Master of Science**

**Philip P. Hall
April 1985**

OUTLINE

- *** Problem Definition
- *** The Personal Computer Solution
- *** Goals of System Design
- *** Design Description
- *** Future Considerations
- *** The Research Environment
- *** Conclusions

PROBLEM DEFINITION

RATIONALE FOR COMMON INTERFACE

- *** Content of IS&R Systems**
- *** Problems In Providing Access**
- *** Increase in PC Processing Power**
- *** Research Possibilities**

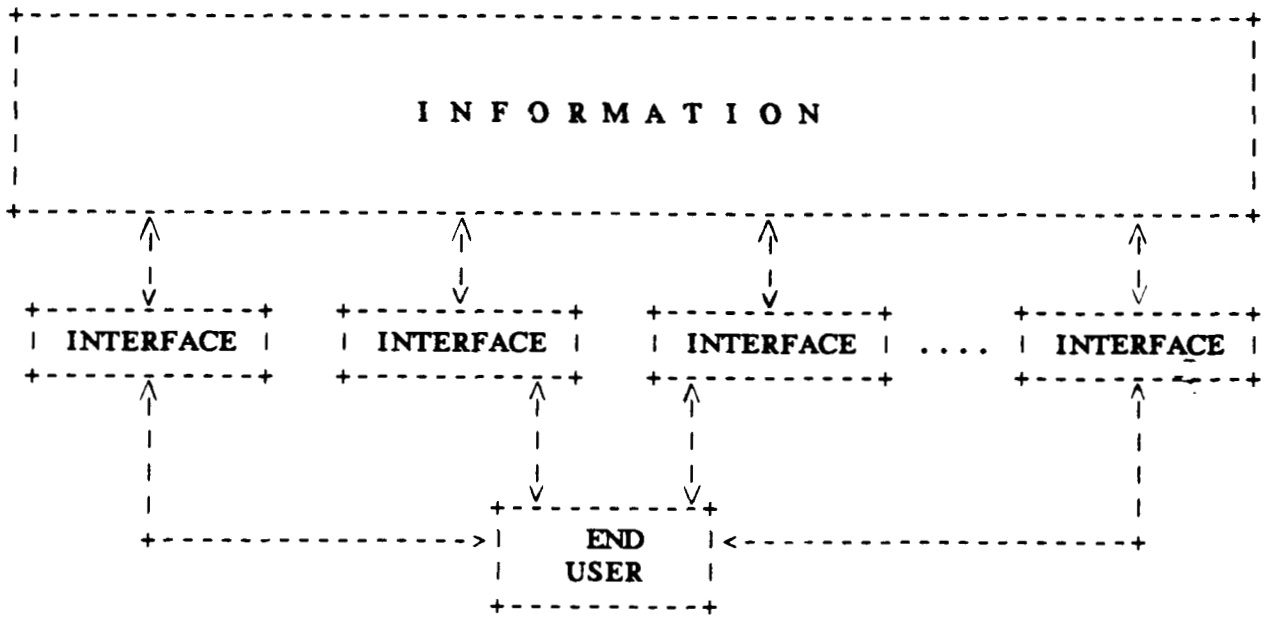
PROBLEM DEFINITION

DEFINING THE CASUAL USER

- *** 70% of User Population**
- *** Characteristics**
 - *** No Desire to Memorize Command Languages**
 - *** Infrequent Access to System**
 - *** Limited Knowledge of Programming**
 - *** Limited Knowledge of Command Languages**
 - *** Extensive Knowledge of Subject Field**
 - *** IS&R Access not REQUIRED By Job**
 - *** Job Enhancement Thru IS&R Access**

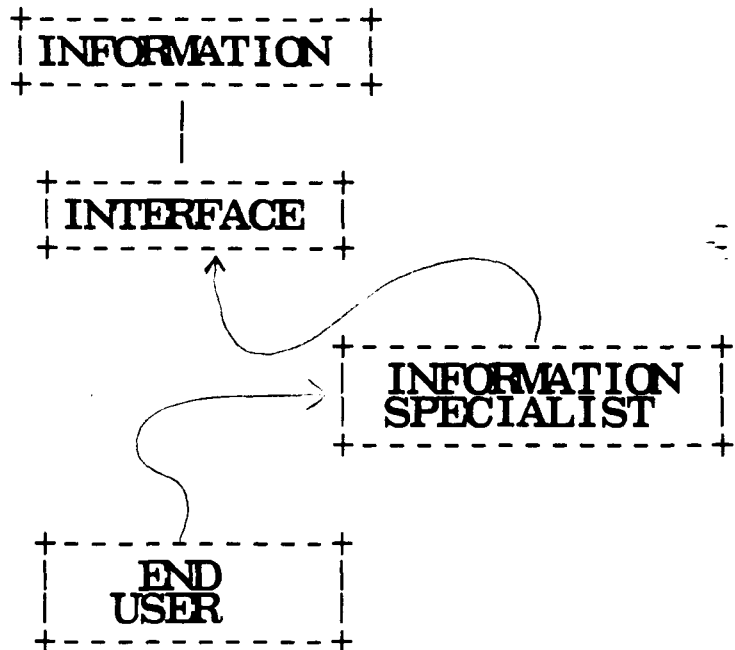
PROBLEM DEFINITION

CURRENT ACCESS METHOD



PROBLEM DEFINITION

INFORMATION SPECIALIST USAGE



THE PERSONAL COMPUTER SOLUTION

REQUIRED PROCESSING CAPABILITIES

- *** Translate User Input into Host System
Commands**
- *** Interpret Host System Responses**
- *** Storage and Manipulation of Accessions
Retrieved from Host**
- *** Utilization of Specialized Input Devices**
- *** Modification of Screen Display
Characteristics**

THE PERSONAL COMPUTER SOLUTION

POSSIBLE ACCESS METHODOLOGIES

*** Terminal -> Host

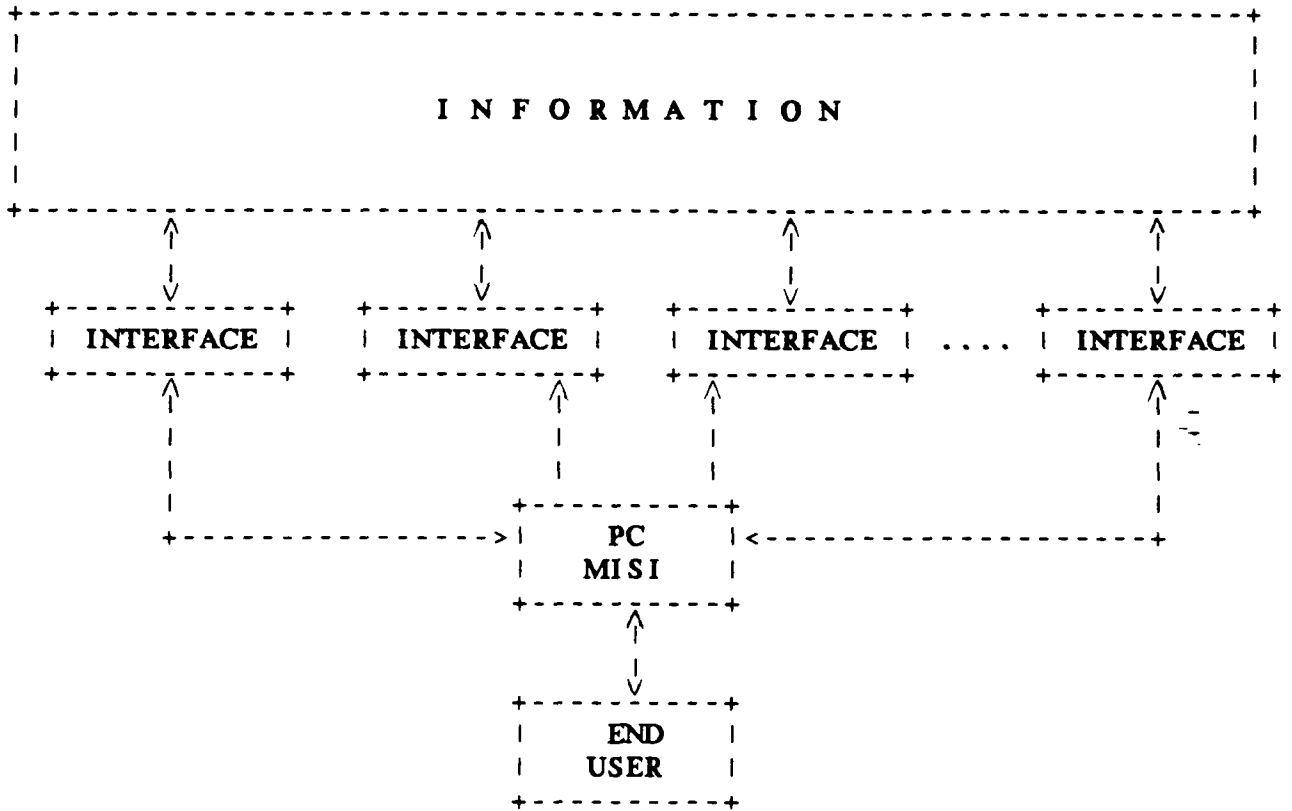
*** Terminal -> Gateway -> Host

*** Terminal -> Local Mainframe -> Host

*** Personal Computer -> $\begin{array}{l} + -> \text{Host} \\ | -> \text{Gateway} -> \text{Host} \\ + -> \text{Local Mainframe} -> \text{Host} \end{array}$

*** Distribution of Functionality

THE PERSONAL COMPUTER SOLUTION



THE PERSONAL COMPUTER SOLUTION

FEASABILITY OF IMPLEMENTATION

- 1) The identification of host system functions which are used by casual users
- 2) The determination that these functions are provided by the target systems
- 3) The identification of local processing needs
- 4) The development of a standard set of commands to be mapped into the required host system functions
- 5) The mapping of the standard command set into commands recognizable by the host system
- 6) The identification of hardware requirements for the implementation of the system.

GOALS OF SYSTEM DESIGN

- GOAL 1: Design a system which allows ease of access to multiple information systems to both the casual user and the experienced user.
- GOAL 2: Utilize the local processing capabilities of the personal computer to enhance the search and retrieval process.
- GOAL 3: Design a system which provides the user with sufficient guidance and interactive capability to allow the utilization of his subject knowledge in the development of system search strategies.
- GOAL 4: Design a system which utilizes state-of-the-art interface design tools available for personal computers while retaining maximum portability.
- GOAL 5: Design a system which may be used for research activities related to the improvement of access to IS&R systems and which provides the necessary monitoring and evaluation tools for such research.
- GOAL 6: Define future system enhancements.

DESIGN DESCRIPTION

FUNCTIONALITY REQUIRED

*** Remote Processing

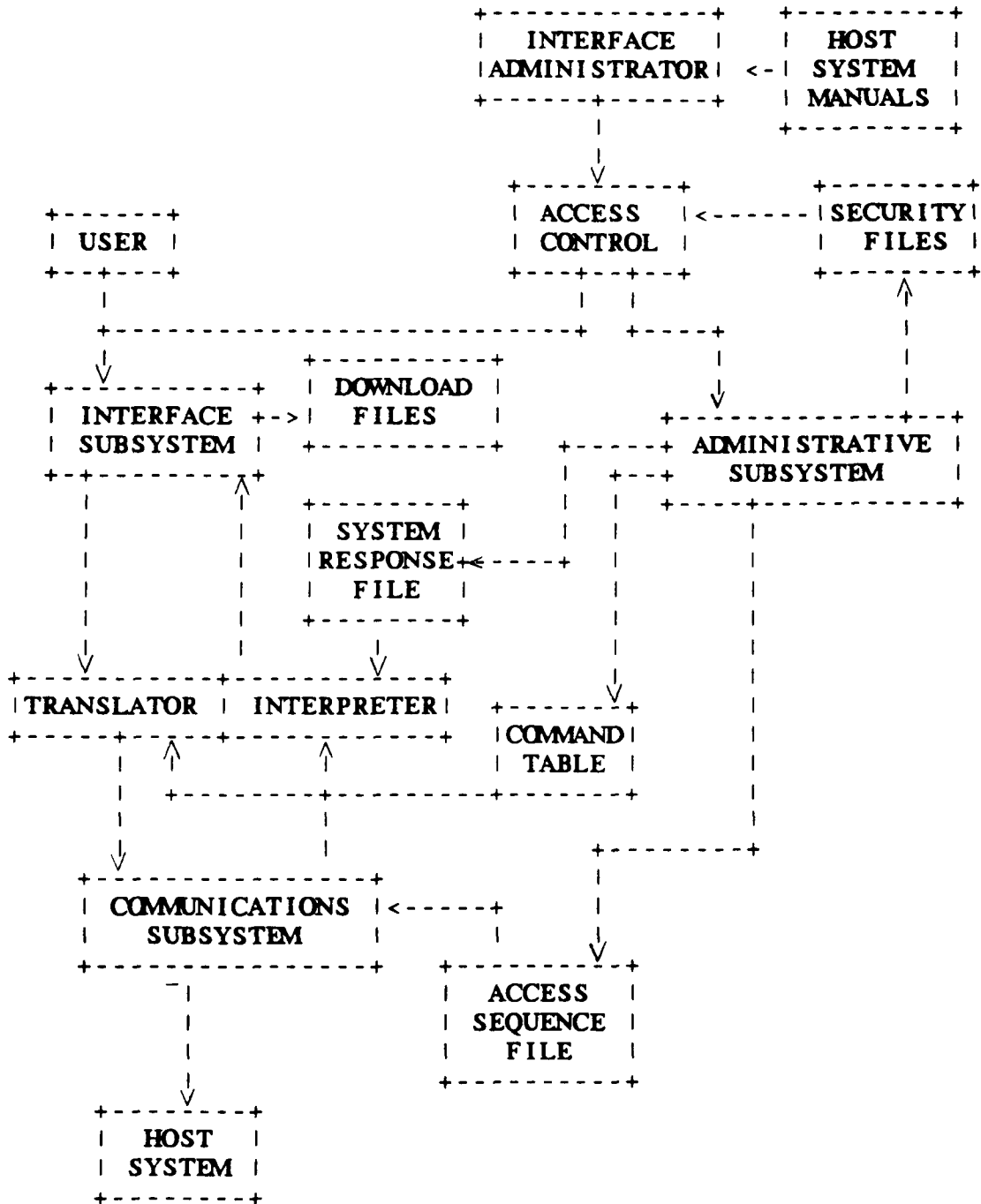
*** Connect to System	*** Disconnect from System
*** Search Subject	*** Search Author
*** Search Accession Number	*** Search Title
*** Search Corporate Source	*** Display Accession
*** List Adjacent Terms	*** List Related Terms
*** Boolean Operations	*** Change Database
*** Print System News	*** Limit Search
*** Remote Print	*** Search Text
*** Set Status	*** Release All Sets
*** Sort Set	

*** Local Processing

*** Save Accession	*** Sort File
*** Merge Files	*** Local Print
*** Name Download File	*** Delete Local File
*** Display Accession	*** Delete Accession

DESIGN DESCRIPTION

SYSTEM DATA FLOW



DESIGN DESCRIPTION

THE INTERFACE SUBSYSTEM

- *** Three Levels of Interaction
 - *** Menu-Driven Interaction
 - *** Command-Driven Interaction
 - *** Direct System Interaction
- *** Batch Processing Capability
- *** Error Handling
 - *** Input Errors
 - *** Host System Errors
- *** Local Storage and Processing of Accessions

DESIGN DESCRIPTION

THE TRANSLATOR/INTERPRETER SUBSYSTEM

*** The Translator

- *** Convert PC/MISI Commands into Host Commands
- *** Send Results to Communication Subsystem
- *** Uses System Command Table

*** The Interpreter

- *** Accepts System Response from
Communication Subsystem
- *** Interprets System Response
- *** Performs Necessary Transformations
on Host Response
- *** Passes Result to Interface Subsystem

DESIGN DESCRIPTION

THE COMMUNICATIONS SUBSYSTEM

- *** Initialize Communications Parameters
- *** Transmit Commands to Host System
- *** Accept and Store Host System Responses
- *** Reset Communications Parameters

DESIGN DESCRIPTION

THE ADMINISTRATIVE SUBSYSTEM

- *** Create and Maintain System Files
 - *** Access Sequence Files
 - *** System Command Files
 - *** System Response Files
 - *** System Security File
- *** Utilization of Evaluation Monitors

DESIGN DESCRIPTION

RESOURCE REQUIREMENTS

*** User Requirements

- *** IBM PC or PC Compatible
- *** Minimum 256K Memory
- *** Dual Floppy Drives or Hard Disk
- *** Hayes-1200 or Compatible Modem
- *** Light Pen (Optional)

*** Development Requirements

*** Hardware

- *** IBM PC/XT
- *** Hayes-1200 or Compatible Modem
- *** Color Monitor
- *** Light Pen

*** Software

- *** C Compiler
- *** Window Generation Library
- *** Statistical Support Package

FUTURE CONSIDERATIONS

FUTURE ENHANCEMENTS

- *** Expert System / AI Applications**
 - *** Enhance User Queries**
 - *** "Advice" to Users**
 - *** "Find" System With Information**
- *** Organize Information into Reports**
- *** Extension to Generalized DEMSs**

FUTURE CONSIDERATIONS

RESEARCH POTENTIAL

- *** Menu vs. Command vs. Direct Access
(and later) vs. Common Commands
vs. Natural Language
- *** Interface Configurations
 - *** Input Devices
 - *** Display Characteristics
- *** Expert System Applications
- *** Extraction and Organization of Information

PC/MISI LEVELS

Level 5 Natural Language/Expert System

Level 4 Common Command Language

Level 3 Menu Driven System

Level 2 PC/MISI Command Language

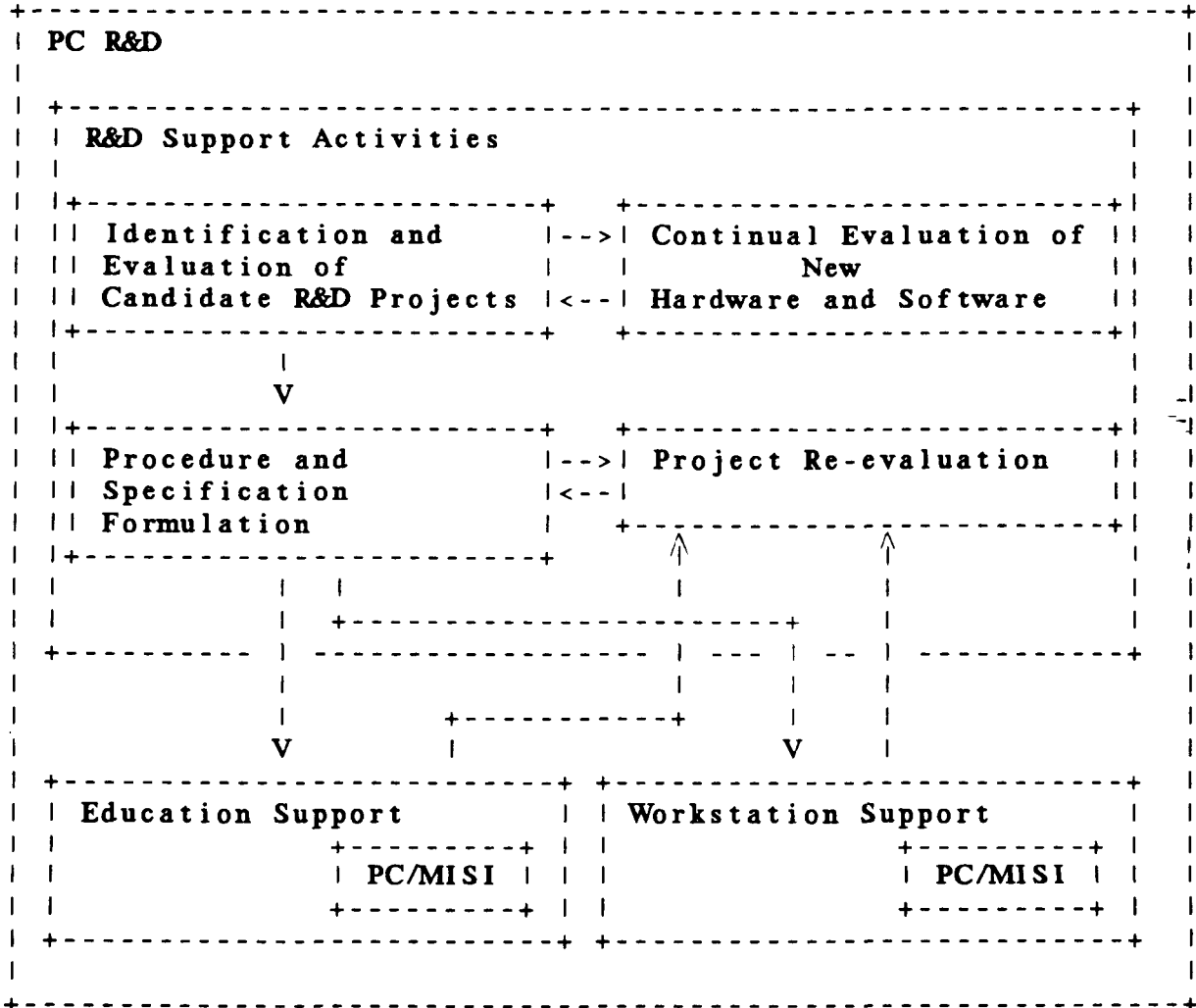
Level 1 Direct Interaction With Host

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N A S A
Personal Computer
Research
and
Development

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THE RESEARCH ENVIRONMENT



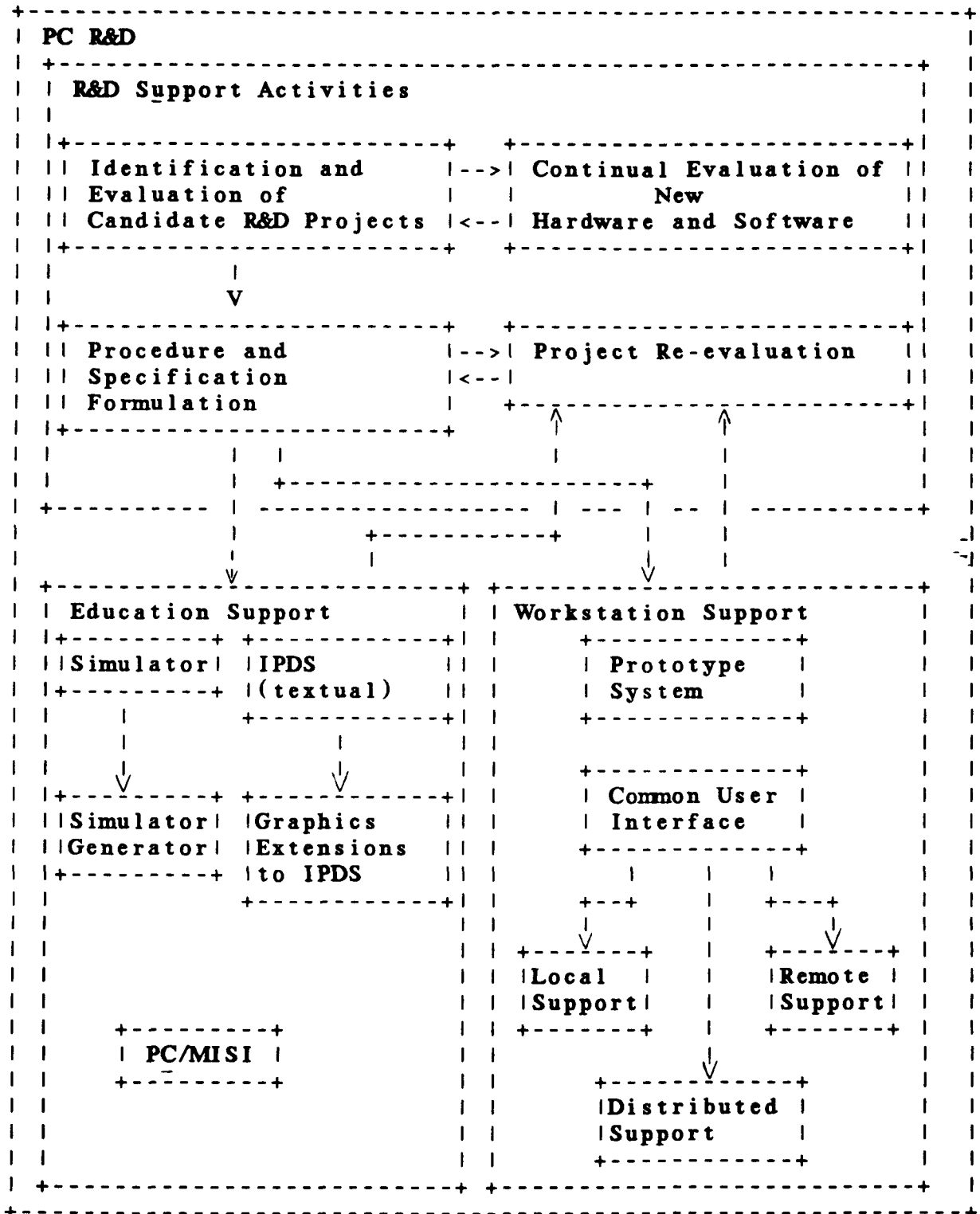


Figure 5.

CONCLUSIONS

- *** Place of PC in Information Retrieval**
- *** Feasibility of Implementation**
- *** Research Potential**
- *** Goal Attainment**

OBJECTIVES OF SYSTEM DESIGN

- OBJECTIVE 1: Provide Ease of Access to Multiple Systems.
- OBJECTIVE 2: Provide for Addition of New Systems.
- OBJECTIVE 3: Develop System Documentation
- OBJECTIVE 4: Provide Multilevel Capabilities.
- OBJECTIVE 5: Maintain User Orientation.
- OBJECTIVE 6: Utilize User's Knowledge.
- OBJECTIVE 7: Facilitate Downloading of Information.
- OBJECTIVE 8: Provide Batch Processing Capabilities.
- OBJECTIVE 9: Provide Error Handling Capabilities.
- OBJECTIVE 10: Extract Maximum Benefit from Display Capabilities
- OBJECTIVE 11: Identify Necessary Data for Evaluation.
- OBJECTIVE 12: Design Data Collection Tools.
- OBJECTIVE 13: Identify Uses of Artificial Intelligence for Future Enhancements.
- OBJECTIVE 14: Identify Multi-User Conversion Possibilities
- OBJECTIVE 15: Maximize Flexibility.

SYSTEM FILE DESCRIPTIONS

FILE NAME	FUNCTION
<System Name>.DB	Contains valid databases for current SCT
<System Name>.host	Contains access sequence for <System Name>
<System Name>.SCT	Contains SCT for <System Name>
<System Name>.IT	Contains IT for <System Name>
Trans.in	Communication from Interface to Translator
Trans.out	Communication from Translator to Interpreter
Inter.in	Communication from Communicator to Interpreter
Inter.out	Communication from Interpreter to Interface
ParamN.out	Communications Parameters (N is a variable value)

PC/MISI COMMAND TABLE

1.	COO	(Connect to system)
2.	DIS	(Disconnect from system)
3.	SED	(Select Database)
4.	FIS	(Find Subject)
5.	FIA	(Find Author)
6.	FIT	(Find Title)
7.	FIC	(Find Corporate Source)
8.	LAD	(List Adjacent Terms)
9.	LIR	(List Related Terms)
10.	DIA	(Display Accession(s))
11.	COO	(Combine Sets)
12.	PRR	(Print Remote)
13.	SYN	(System News)
14.	SET	(Search Text)
15.	FIN	(Find Accession Number)
16.	LIM	(Limit Searches)
17.	SES	(Display Set Status)
18.	REL	(Release All Sets)
19.	SOR	(Sort Set)
20.	CHAF	(Change Download File)
21.	SOF	(Sort Local File)
22.	MEF	(Merge Local Files)
23.	PRL	(Print File on Local Printer)
24.	DEF	(Delete Download File)
25.	DIF	(Display Records in Local File)
26.	DER	(Delete Record from Local File)

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