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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USL/DBMS NASA/RECON Working Paper Series

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TRANSPORTABLE, UNIVERSITY-LEVEL EDUCATIONAL PROGRAMS IN
INTERACTIVE INFORMATION STORAGE AND RETRIEVAL SYSTEMS

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11th Annual Conference of the Mid-South Association for Educational Data Systems, February 22–25, 1984

January 27, 1984
TRANSPORTABLE, UNIVERSITY-LEVEL EDUCATIONAL PROGRAMS IN
INTERACTIVE INFORMATION STORAGE AND RETRIEVAL SYSTEMS

ABSTRACT

Pursuant to the specifications of a research contract entered into in December, 1983 with the National Aeronautics and Space Administration (NASA), the Computer Science Departments of the University of Southwestern Louisiana and Southern University will be working jointly to address a variety of research and educational issues relating to the use, by non-computer professionals, of some of the largest and most sophisticated interactive information storage and retrieval systems currently available at the present time.

Over the projected 6-8 year period of this research contract, it is expected that the following systems will be addressed:

[1] NASA / RECON
[2] LOCKHEED DIALOG
This presentation to Mid-South AEDS will overview some of the educational issues to be addressed in the context of developing effective educational programs for training non-computer professionals in the use of very large-scale interactive information systems.
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INTERACTIVE INFORMATION STORAGE AND RETRIEVAL SYSTEMS

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|  V I S U A L S  |
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| DBMS.NASA/RECON-3 | - 4 - | A E D S |
OVERVIEW OF THE PRESENTATION

*** EDUCATIONAL OBJECTIVES

*** CONTRACT FUNDING SOURCES

*** CONTRACT TIME FRAMES

*** PARTICIPATING AGENCIES (PROJECTED)

*** OVERVIEW OF COMPUTING ENVIRONMENTS

*** EDUCATIONAL ORIENTED CONTRACT TASKS

*** INFORMATION SYSTEM TOPICS TO BE ADDRESSED

*** FUTURES
EDUCATIONAL PROGRAM DEVELOPMENT

*** Very Large Scale Interactive IS & R Systems
*** Multiple Systems Orientation
*** Multiple Data Bases Orientation
*** University - Level Orientation
*** Scientific and Engineering Disciplines
*** Non - Computer Professional Audience
*** Fully Transportable Course Materials

EDUCATIONAL PROGRAM IMPLEMENTATION

*** Pilot Administration at USL & SU
*** Pilot Evaluation
*** "Marketing"
*** Implantation / Distribution
*** Continual Enhancement
*** Periodic Evaluation

EDUCATIONAL RESULTS ----> RESEARCH TOPICS

RESEARCH RESULTS ----> EDUCATIONAL APPLICATIONS
## CONTRACT FUNDING SOURCES

### Primary Funding Sources

<table>
<thead>
<tr>
<th>Source</th>
<th>Years</th>
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<tbody>
<tr>
<td><em>NATIONAL AERONAUTICS AND SPACE ADMINISTRATION</em> (NASA)</td>
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<tr>
<td><em>DEPARTMENT OF DEFENSE</em> (DoD)</td>
<td>2-8</td>
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### Other Funding Sources

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<thead>
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<tr>
<td><em>DEPARTMENT OF ENERGY</em> (ENERGY/RECON)</td>
<td>2-8</td>
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<tr>
<td>Oak Ridge National Laboratory</td>
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</tr>
<tr>
<td><em>LAWRENCE LIVERMORE NATIONAL LABORATORY</em></td>
<td>2-8</td>
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<tr>
<td>(TIS - Technology Information System/Intelligent Gateway System)</td>
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<tr>
<td><em>ENVIRONMENTAL PROTECTION AGENCY</em></td>
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<tr>
<td>(CSIN - Chemical Substance Information Network)</td>
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<td><em>DEFENSE TECHNICAL INFORMATION CENTER</em></td>
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<tr>
<td>(DROLS)</td>
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<tr>
<td><em>LOCKHEED</em> (DIALOG)</td>
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<tr>
<td><em>OTHER AGENCIES WILL ALSO PARTICIPATE</em></td>
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**NEEDS ANALYSIS**

11

**COURSES DEVELOPMENT**

11112222

**COURSES PILOT ADMINISTRATION**

222233

**"MARKETING"**

2222333344445555666677778888

**DISTRIBUTION / ADMINISTRATION**

3344445555666677778888

**EVALUATION / ENHANCEMENT**

5555666677778888

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**CONTRACT TIME FRAMES**

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YEARS

1 2 3 4 5 6 7 8

**NEEDS ANALYSIS**

1

**COURSES DEVELOPMENT**

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**EVALUATION / ENHANCEMENT**

5555666677778888
**PARTICIPATING AGENCIES (PROJECTED)**

**CURRENT NASA / RECON USERS**

***NASA HEADQUARTERS***

***NASA SPACE CENTERS / RESEARCH CENTERS***

- Ames Research Center
- Goddard Space Flight Center
- Jet Propulsion Laboratory
- John F. Kennedy Space Center
- Langly Research Center
- Lewis Research Center
- Lyndon B. Johnson Space Flight Center
- Marshall Space Flight Center
- Others

***NASA USER UNIVERSITIES***

- California Institute of Technology
- Cornell University
- Georgia Institute of Technology
- Johns Hopkins University
- Massachusetts Institute of Technology
- Princeton University
- Purdue University
- University of California
- University of Michigan
- University of Southwestern Louisiana
- Many Others

***A FEW OF THE MANY MANY OTHERS***

- Executive Office of the President:
  - Library
  - White House Information Center
- Congress of the United States
- All Branches of DoD
- Library of Congress
- National Bureau of Standards
- Smithsonian
- Many Many Others
OVERVIEW OF COMPUTING ENVIRONMENTS

*** NASA / RECON - CENTRAL COMPUTING FACILITY

NASA HQ : WASHINGTON, DC

(Schematic Illustrated on Subsequent Visual)

*** DISTRIBUTED ACCESS WORKSTATIONS / TERMINALS

*** PC - Based Workstations to Provide:

*** Terminal Access to NASA / RECON.
*** Local Standalone Processing.

*** NASA COMPUTER / COMMUNICATIONS NETWORK

(Schematic Illustrated on Subsequent Visual)
EDUCATIONAL ORIENTED CONTRACT TASKS (Partial List)

*** NEEDS ANALYSIS PHASE

*** Identify Target Institutions
*** Develop Needs Analysis Questionnaire
*** Survey Targeted Institutions
*** Analyze Questionnaire Results
*** Phase Evaluation / Interim Report

*** COURSE DEVELOPMENT PHASE

*** Develop Course Materials:

*** Syllabi
*** Lesson Plans
*** Homework Assignments/Keys
*** Usage Assignments/Keys
*** Examinations/Keys
*** Visuals

*** Phase Evaluation / Interim Report

*** COURSE ADMINISTRATION PHASE

*** Implement Courses:

*** 1-2 Day Intensive Workshops
*** 6 Week Mini-Course
*** 18 Week Full Semester Course

*** Phase Evaluation / Interim Report
EDUCATIONAL ORIENTED CONTRACT TASKS (Partial List)

FOLLOW-ON PHASES

*** Develop "Marketing" Plan

*** Implement "Marketing" Plan

*** Conduct Regional Seminars

*** Conduct On-Site Seminars

*** Coordinate Request Processing / Dissemination

*** Perform Course State - of - the - Art Enhancements

*** Perform Institutional Surveys / Evaluations

*** Perform Graduated Student Surveys / Evaluations

*** Perform Additional System - Oriented and Data Base - Oriented Enhancements

*** Perform Periodic Statistical Summary Reporting
INFORMATION SYSTEM TOPICS TO BE ADDRESSED
(Small but Illustrative Subset of Topics)

*** Feature Analysis of Interactive Information Storage and Retrieval Systems
   *** User Categorizations
   *** Data Models
   *** Logical Data Structures
   *** Physical Storage Structures
   *** Data Base Definition
   *** Data Base Interrogation/Searching
   *** Data Base Report Generation
   *** Data Base Update
   *** Data Base Redefinition
   *** Data Base Administrative Functions
   *** Data Base Security Considerations
   *** Performance Measurement and Evaluation

*** Bibliographic Data Base Design

*** Bibliographic File Structures
   *** Linear File Organizations
   *** List Structured File Organizations
   *** Clustered File Organizations

*** Vocabulary Control
   *** Controlled Vocabularies
   *** Free Text Approaches
   *** Thesaurus Support

*** Bibliographic Data Base Searching
   *** Types/Levels of Search Languages
   *** Search Formulation Features
   *** Output Generation Features
   *** Instructional/Diagnostic Features

*** Additional IS&R Application Areas

*** IS&R Performance Measurement and Evaluation
   *** Phases of the PME Life Cycle
   *** Traditional, Obtrusive User Monitoring
   *** Advanced, Unobtrusive User Monitoring

*** Future Information Storage and Retrieval Systems
R & D ORIENTED FUTURES

*** PC - Based Information System Simulators & PC - Based Data Base Simulators

*** PC - Based CAI Training Mechanisms

*** Multi - System Common Command Languages

*** PC - Based Front - End Command Language Translators

*** Specification / Design / Prototyping of a Robust PC - Based Scientist's / Engineer's R & D Environment:

*** Access to Multiple IS & R Systems
*** Access to Multiple DBMS Systems
*** Access to R & D Support Tools:
    *** Statistical Packages
    *** Graphical Display Packages
    *** Simulation / Modeling Packages

*** Specification of Distributed Workstation Functionality

*** Distributed Workstations / Centralized Mainframes
    Intercommunication (Uploading/Downloading) Protocols

*** Migration of All Contract Deliverables:
    University - Level ---> High School - Level
USL/NGT-19-010-900: TRANSPORTABLE, UNIVERSITY-LEVEL EDUCATIONAL PROGRAMS IN INTERACTIVE INFORMATION STORAGE AND RETRIEVAL SYSTEMS

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Working Paper Series entry representing the abstract and visuals associated with the above named presentation delivered at the 11th Annual Conference of the Mid-South Association for Educational Data Systems. This presentation overviewed the educational aspects of the NASA contract activities.

This report represents one of the 72 attachment reports to the University of Southwestern Louisiana's Final Report on NASA Grant NGT-19-010-900. Accordingly, appropriate care should be taken in using this report out of the context of the full Final Report.