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For more information, contact:

Wayne D. Dominick

Editor
USL/DBMS NASA/PC R&D Working Paper Series
Computer Science Department
University of Southwestern Louisiana
P. O. Box 44330
Lafayette, Louisiana 70504
(318) 231-6308

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GENERAL SPECIFICATIONS FOR THE DEVELOPMENT OF A USL/DBMS NASA/PC R&D DISTRIBUTED WORKSTATION

Frank Y. Chum

The University of Southwestern Louisiana
Computer Science Department
Lafayette, Louisiana

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GENERAL SPECIFICATIONS FOR THE DEVELOPMENT OF A USL NASA PC R&D DISTRIBUTED WORKSTATION

ABSTRACT

This document defines the general specifications for the development of a PC-Based distributed workstation (PCDWS) for an information storage and retrieval systems environment. This research proposes the development of a PCDWS prototype as part of the USL/DBMS NASA/PC R&D project in the PC-Based workstation environment.

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GENERAL SPECIFICATIONS FOR THE DEVELOPMENT OF A USL NASA PC R&D DISTRIBUTED WORKSTATION

I. INTRODUCTION

This document defines the general specifications for the development of a PC-based distributed workstation for the information storage and retrieval systems environment associated with NASA Contract Number NASW-3846.

With the advent of Large Scale Integration and Very Large Scale Integration (LSI/VLSI) technologies, microcomputers have become more and more powerful and cost-effective. Databases residing on them also become widely available. The trend of personal computers (PCs) serving as workstations provide the capabilities for having users become more effective in their utilization of a wide variety of machines in performing a large variety of functions local to the users. With the proliferation of personal computer hardware/software and telecommunication technology, we believe that the need for research and development of PC-based distributed workstation environments for information

storage and retrieval systems is extremly viable.

Our main goal is to develop a distributed workstation environment for scientists and engineers to assist them with day-to-day problem solving tasks as well as for accessing remote and/or local information systems. We propose to develop a comprehensive set of tools as functional components for the prototyping of a robust distributed workstation in an information storage and retrieval environment.

II. GENERAL AND SPECIFIC R&D OBJECTIVES

The general and specific research and development objectives of this research are summarized in the following sub-sections.

2.1 General Goals and Objectives

1. Provide a mechanism for very wide distribution of the information storage and retrieval capabilites of the NASA/RECON system.

2. Provide the potential performance improvement of performing selected functions local to the users.

3. Provide simulated information storage and retrieval system environments.

4. Provide state-of-the-art technology available to the NASA/RECON system.

2.2 Specific R&D Objectives

1. Provide a robust personal computer workstation environment with a comprehensive set of tools as functional components to serve as a scientist's / engineer's R&D workbench.

2. Provide access to multiple DBMS and/or IS&R systems.

3. Provide distributed/networked workstation intercommunication and uploading/downloading protocols between workstations and remote mainframes as well as between workstations.

III. RESEARCH & DEVELOPMENT METHODLOGY

The research and development will be performed in three phases, namely, the specifications phase, design and implementation phase, and deployment phase. Various stages of each phase are sumarized below. Figure 1 illustrates the interactions of the stages within the three phases.

3.1 Phase I : Specifications

1. User Requirement Analysis
2. NASA/RECON Requirement Analysis
3. Distributed Workstation Functional Specifications
4. Evaluation of Candidate Workstation Systems
5. Selection of Candidate Systems
6. Model System and Network Architecture

3.2 Phase II: Design and Implementation

1. Implementation Study and Design Specifications
2. System Implementation

3. Testing and Debugging

4. Prototyping of Finished System

3.3 Phase III: Deployment

1. Development Deployment and Support Strategies

2. Operational Maintenance and Enhancement

3. Performance Measurement and Evaluation

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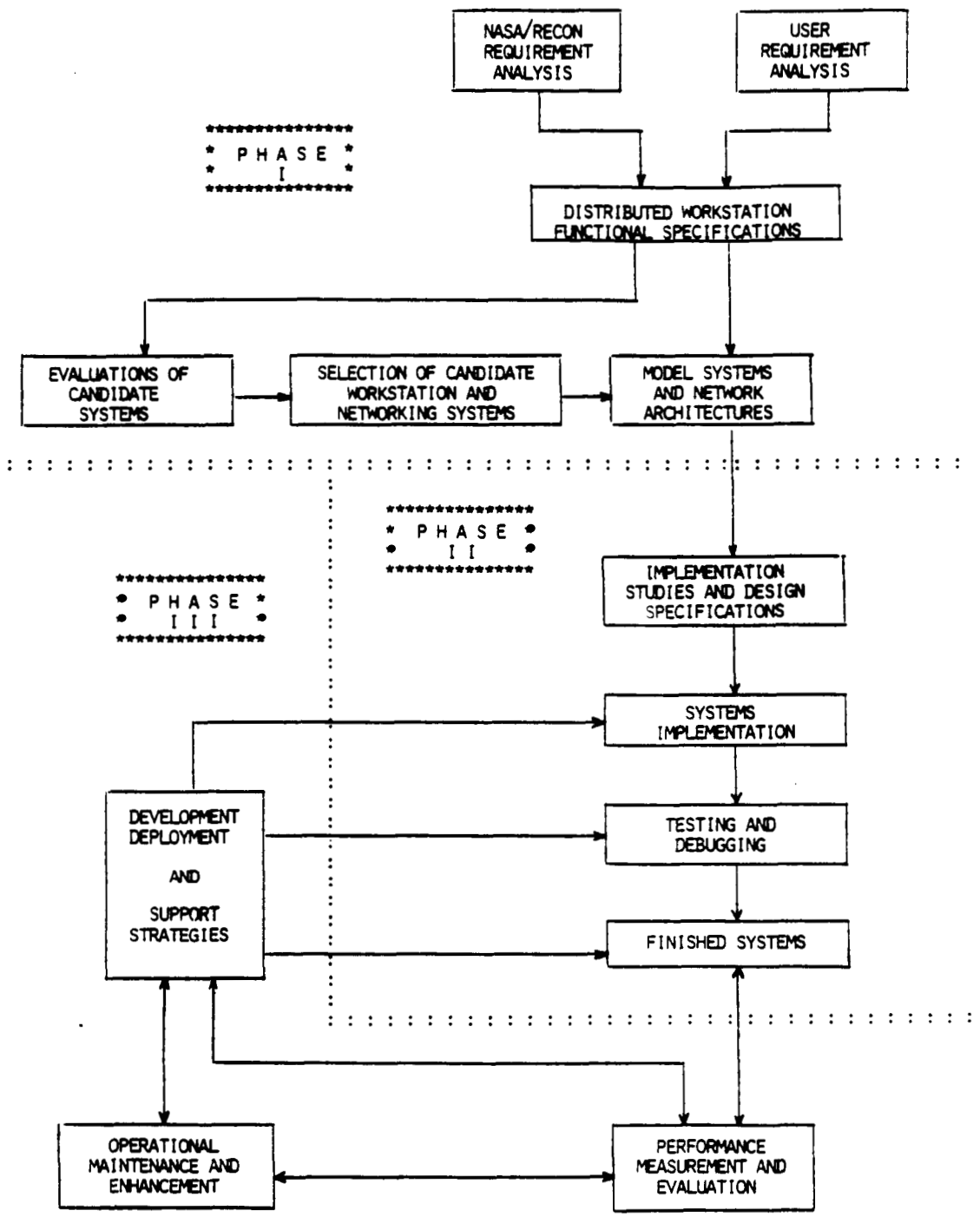

FIGURE 1. RESEARCH AND DEVELOPMENT PHASES AND THEIR INTERACTIONS

IV. SUMMARY AND CONCLUSION

This document describes general specifications for the development of a PC-based distributed workstation in the information storage and retrieval environment. General and selected specific research and development objectives are specified and a methodology is briefly overviewed for the prototyping of a such system.

We believe that this research will be extremely significant within both current and future information system oriented R&D workstation environments.

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FRANK Y. CHUM

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