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Experimental Internet Environment
Software Development
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This report documents efforts performed under contract NAS8-38609 Delivery Order 169.

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3.0 Activities

The activities undertaken during this task emphasized moving the VRC from technical feasibility to a working resource by which NASA scientists and engineers could use the WWW to collaborate on specific experiments. In order to meet this objective, successful completion of the subtasks listed in the statement of work was required.

As a member of the VRC team, UAH was able to satisfactorily address all three requirements. A data archiving system was completed that allowed experiment collaborators to check documentation in and out as required. By building this shared library, scientists and engineers now have the ability to work in a more collaborative environment, a requirement of the complex science typified by NASA researchers.

The further development of the graphical user interface (GUI) and Internet security was addressed by the UAH team. The principal GUI for the VRC was enhanced to provide a more user friendly and intuitive approach to the VRC participant. The security issues, including encryption and password authentication, were a substantial effort within this task.

All software and documentation for the VRC task have been delivered under separate cover.

4.0 Conclusion and Recommendations

During the period allocated by the delivery order, members of the UAH Research Institute Systems Management and Production Lab, with the cooperation of representatives from NASA, designed, developed and implemented enhancements to the VRC. These enhancements addressed the archival, graphical interface and security subsystems of the VRC. Upon completion of these features, a number of NASA experiments were included within the VRC, and access was granted to those scientists and engineers who were developing those experiments.

It is recommended that the VRC continue to be developed and enhanced. With a system based on the Internet technology, it is imperative that the system be continually maintained and updated. As the Internet evolves to provide the world with more and more functionality, the VRC can provide ever-greater service to the NASA scientific community.

PREFACE

This technical report was prepared by the staff of the Research Institute, The University of Alabama in Huntsville. The purpose of this report is to provide documentation of the work performed and results obtained under Delivery Order 169 of NASA Contract No. NAS8-38609. Mr. Keith Crowe and Mr. Gary Maddux were the principal investigators. Ms. Jennifer Demirjian provided technical support.

The views, opinions, and/or findings contained in this report are those of the author(s) and should not be construed as an official NASA position, policy, or decision unless so designated by other official documentation.

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Prepared for: Marshall Space Flight Center
Huntsville, AL 35898

I have reviewed this report, dated 12 Sept 98 and the report contains no classified information.

Gary A Maddux

Principal Investigator

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1.0 Introduction

Geographically distributed project teams need an Internet based collaborative work environment or "Intranet." The Virtual Research Center (VRC) is an experimental Intranet server that combines several services such as desktop conferencing, file archives, on-line publishing, and security. Using the World Wide Web (WWW) as a shared space paradigm, the Graphical User Interface (GUI) presents users with images of a lunar colony. Each project has a wing of the colony and each wing has a conference room, library, laboratory, and mail station.

In FY95, the VRC development team proved the feasibility of this shared space concept by building a prototype using a Netscape commerce server and several public domain programs. Successful demonstrations of the prototype resulted in approval for a second phase. Phase 2, documented by this report, will produce a seamlessly integrated environment by introducing new technologies such as Java and Adobe Web Links to replace less efficient interface software.

2.0 Statement of Work

The statement of work, as outlined in delivery order 169, was as follows:

UAH shall perform the following specific activities:

Experimental Internet Based Multi-Media Archive. Geographically distributed teams require tools for archiving project related documentation and media. This archive tool provides a graphical user interface for checking documents into and out of a remote file server. Presently, a prototype archiving system exists but the process for checking in and out documentation is only partially automated. In addition to on-line text documents, this archiving system shall provide links to a variety of audio and visual material.

Experimental WWW User Interface. This task will apply HTML, Java, and Adobe Acrobat Web Links and develop an experimental GUI. The GUI will provide geographically distributed design teams access to a variety of collaborative computing utilities, multi-media presentations, and operating system scripts. Objectives of this experiment include comparing different techniques and technologies for client/server multi-application integration.

Application of Encryption Technology in an Internet Testbed. Security is a major concern of teams comprising representatives from industry. This experiment will apply encryption technology to an Internet based collaborative work environment. UAH shall install an encryption system and develop a multi-level approach to security in an Internet based collaborative computing environment.

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