Information on Demand Technologies and Applications

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Introduction

NPAC is a leading national center for developing commercial applications of high performance information technologies. Our activities are focused around InfoVision--database Information, Video, Imagery, and Simulation on demand technologies and applications. NPAC leads InfoMall, a consortium of some fifty small business, large corporation, and research institution partners in developing HPCC software and new information products for the coming information age.

What is the best approach to exploiting very powerful computers and high speed networks for commercial application? InfoMall addresses this question by combining excellent technical facilities and expertise, a virtual organization structure, focused application testbed development activities, and a set of InfoMall products and services to assist its customers exploit HPCC technologies.

InfoMall Focus

Facilities: InfoMall has a rich and diverse facilities. Our parallel computers include the SP2, nCUBE2, CM5, and MasPar MPPs, and Alpha and RS/6000 workstation clusters. Our parallel database technologies are based on parallel Oracle on the nCUBE2 (200 GB disk) and SP2 (soon to be 140 GB disk) , with parallel DB2 coming on the SP. NPAC is a beta test site for Oracle's parallel text retrieval engine. NPAC is a node on NYNET, a wide area ATM gigabit network connecting the parallel computing facilities at the U.S. Air Force Rome Laboratory, Syracuse, and Cornell University.

Virtual Partnerships: InfoMall is synonymous with partnerships. InfoMall has spurred the creation of a number of virtual corporations of small business, large corporations, and research center partners organized to develop new software products based on HPCC technologies. InfoMall partnerships have successfully competed for SBIR and NIST ATP funds. Products of our partnerships include parallel database technology

benchmarking, database mining tools, text retrieval on educational databases, web based travel and tourism information, video on demand prototypes, and electrical power network simulation.

Application Testbeds: NPAC has a number of application testbed development activities in progress. Four key applications in education, health care, electronic journalism, and government and community information systems exemplify National Challenge applications and serve as prototype applications of the future National Information Infrastructure.

The Living Textbook project will deliver innovative multimedia educational applications to K-12 classrooms over the NYNET wide area gigabit network. Six pilot schools are participating, three in central New York, and three in New York City. Educational researchers at the Syracuse University School of Education and Columbia Teachers College are teamed with network technologists at NYNEX, and computational scientists at NPAC. An example of the InfoMall model of dynamic partnerships, the Living Textbook links a number of outside partners including AskERIC, ReFlex I/O, Rome Laboratory, Syracuse Language Systems, and WorldView Information Technology. With design input from teacher teams, we will develop and deliver to the classroom a cache of web resources for educators, an interactive three-dimensional journey of New York State, and a video on demand library. Related applications include foreign language, archeology, and astronomy multimedia software.

A telemedicine project teams NPAC and the State University of New York Health Science Center in a project to deploy collaboration technology over high speed networks. Two and three dimensional image processing will be integrated with collaboratory software to link university hospital specialists with general practitioners in rural hospitals to strengthen pathology, surgery, and trauma care in a very large health care delivery region.

A new initiative between NPAC and the Newhouse School of Public Communications at Syracuse University will prototype digital wire service delivery between news broadcasters and their affiliates. Live satellite feeds of video source material will be captured, digitized, compressed, and stored in real time, with off-line indexing. A multi resolution format for video and image content provides low resolution browsable material, as well as high resolution broadcast quality material.

A government and community information system exploits the parallel database technologies in place at NPAC. We will prototype delivery of multimedia information from "InfoVision" servers on the network to county, town, city governments, and community organizations. This system will support public access to information on taxes, development regulations, fees and permits, facility schedules, environmental health, and cultural

resources. InfoMall partners contributed to this project are Oracle, NYNEX, and TextWise a high technology start-up company.

InfoMall Products and Services
InfoMall delivers products and services to its customers in system benchmark and evaluation, technology evaluation, and access to early production facilities.

System benchmarking and evaluation: InfoMall offers a heterogeneous array of HPCC systems and expertise, and is ideally suited to evaluating functionality and performance in a neutral environment. Ongoing commercial projects include evaluation of parallel database systems, collaboration technologies, and multimedia information delivery systems. InfoMall customers use this service to obtain impartial information on system performance, to demonstrate the true measure of their systems, and to support internal decisions regarding mission critical HPCC systems and applications. For example, NPAC is benchmarking the performance of a 100 gigabyte database on two different hardware/software systems for a Fortune 100 market research company.

Technology evaluation: NPAC is evaluating alternative system approaches to video on demand in a large scale, high performance environment for a telecommunication company seeking to open new markets on the digital superhighway. This project concerns system integration issues of large scale storage, multimedia services on MPPs, network delivery, and system cost/performance. Impartial information on the reliability and dependability of alternative video server systems will guide the commercial strategy of this InfoMall customer.

Access to early production facilities: Access to world class InfoMall facilities and the impending information superhighway opens mega-opportunities to small business entrepreneurs. Progressive companies feel that if they don't react to these new opportunities, their competitors will. A small software start-up with an exciting consumer application on a CD ROM recently joined InfoMall. This company already had strong sales and high praise from the trade press. Upon joining InfoMall, this company found they had set their expectations too low. Working with InfoMall's research staff, which this company could never internally afford nor attract, this company ported their PC based application to a large media server, became part of a statewide proposal to supplying programs over an experimental highspeed network, and have now demonstrated their technology to several large companies considering products and services for the NII and other regional networks. Unlike their competition, they are already motoring on the information superhighway.

Other InfoMall products and services include parallel code development, an electronic InfoMall, a virtual R&D staff, and consulting and training.