Seeking Solutions: High Performance Computing for Science

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Foreword

High-performance ‘‘supercomputers’ * are fast becoming tools of international competition and they play an important role in such areas as scientific research, weather forecasting, and popular entertainment. They may prove to be the key to maintaining America’s preeminence in science and engineering. The automotive, aerospace, electronic, and pharmaceutical industries are becoming more re!iant on the use of high-performance computers in the analysis, engineering, design, and manufacture of high-technology products.

Many of the national and international problems we face, such as global environmental change, weather forecasting, development of new energy sources, development of advanced materials, understanding molecular structure, investigating the origin of the universe, and mapping the human genome involve complex computations that only high-performance computers can solve.

This is the second publication from our assessment on information technology and research, which was requested by the House Committee on Science and Technology and the Senate Committee on Commerce, Science, and Transportation. The first background paper, *High Performance Computing & Networking for Science,* published in 1989, framed the outstanding issues; this background paper focuses on the Federal role in supporting a national high-performance computing initiative.

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JOHN H. GIBBONS
Director

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Director
Ohio Supercomputer Center

Charles DeLisi
Chairman
Department of Biomathematical Science
Mount Sinai School of Medicine

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Computer Science Department
University of Southern California

Robert Ewald
Vice President, Software
Cray Research, Inc.

Kenneth Flamm
Senior Fellow
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Information Services & Technology
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OTA Project Staff—High-Performance Computing

John Andelin, *Assistant Director, OTA*
Science, Information, and Natural Resources Division

James W. Curhlin, Telecommunication *and Computing Technologies Program Manager*

Fred W'. Weingarten,[1] *Project Director*

Elizabeth I. Miller, *Research Assistant*

Administrative Staff

Elizabeth Emanuel, *Office Administrator*

Karolyn St. Clair, *Secretary*

Jo Anne Price, *Secretary*

[1]Through June 30, 1990.