

# Modeling Technology for the 21st Century

## APPLIED INTELLIGENCE

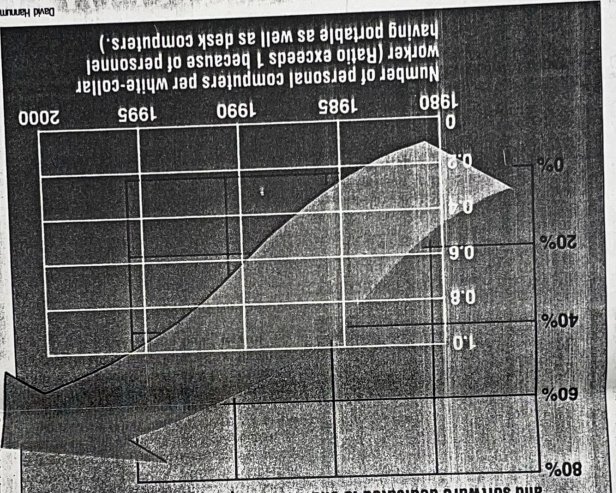


JAMES MARTIN

In this, the fifth column, James Martin describes the most significant aspects of computer technology that we can expect in the first decade of the 21st century.

Most new computers will be ultra-parallel machines. Because there are so many processors per wafer, and wafers are mass-produced in large quantities, the cost per processor will be extremely low. With the exception of supercomputer applications, most computers will be built from large numbers of cheap wafers, without expensive cooling requirements. Supercomputers will achieve the landmark speed of a trillion floating-point operations per second (flops). As we approach the end of the 20th century, there is a general feeling that we are entering a dramatically new, technologically based era. The last years of the 20th century will lay the technological infrastructure for this move to a remarkably different era. The century will end with a spectacular sequence of New Year parties around the world, linked by satellite television on digital, high-resolution sets in different locations. The celebration will be symbolic of a 21st century world in which all peoples are united by telecommunications and technology.

### Computer Profile of Typical Advanced Corporation and Software Dedicated to End-User Computing



Number of personal computers per white-collar worker (ratio exceeds 1 because of personal laptop) (Data: Hewlett-Packard)

### By the year 2000, there will be limited scope for making uniprocessors faster. Increasing the degree of parallelism will depend largely on increasing their degree of parallelism.

Several new technologies will converge to provide an infrastructure for electronic access to information: large optical-storage libraries, wideband data-transmission networks, distributed databases, management systems, "open" distributed hypertext, and retrieving information, highly parallel search engines, and personal "bracket" that help an individual find, monitor, and pay for information. A major medium for publishing will be the interactive compact disk (CDI), which can interleave text, pictures, moving images, speech and music of different quality levels. Next week, we will explore the technology that we can expect to see in the second decade of the 21st century.

The James Martin Prediction Service updates an information service quarterly, is available through High-Productivity Software Inc., of Marblehead, Mass. (617) 639-1958. For information on seminars, please contact in the United States and Canada. Technology Transfer Institute, 741 10th St., Santa Monica, Calif. 90408 (213) 394-8305. In Europe, contact Savam, 2 New St., Camford, Lancs, L69 3BX, United Kingdom (0524) 734 505.

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Low-cost speech-input word processors, using almost the whole human vocabulary, will replace most keyboard word processors. The sixth generation of computers, introduced during the first decade of the century, will be ultra-parallel machines built from wafers containing many processors. They will employ superconductivity, some optical components, massively parallel database engines and interface engines, multiple neuro-coprocessors and optical channels operating at many billions of this per second. By the year 2000, there will be limited scope for making uniprocessors faster. Increasing the power of computers will depend largely on increasing their degree of parallelism.

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