1100 Seventeenth Street, NW, Suite 507, Washington, DC 20036-4632 http://www.cra.org info@cra.org
TEL 202-234-2111 FAX 202-667-1066

POLICY BRIEF

# The President's Information Technology Advisory Committee (PITAC) Final Report

## FACT SHEET

- **The PITAC was chartered by Congress in the High Performance Computing Act of 1991**. The Next Generation Internet Research Act (HR 3332), sponsored by Chairman Sensenbrenner of the House Science Committee and signed by President Clinton (Public Law 105-305) in 1998, further directed PITAC to: "assess the extent to which Federal support of fundamental research in computing is sufficient to maintain the Nation's critical leadership in this field and make recommendations relating to its findings…."

- The PITAC's final report, ***Information Technology Research: Investing in Our Future***, issued on 24 February 1999, is a direct response to that Congressional mandate.

- The PITAC report emphasizes a key finding…**The federal investment in Information Technology R&D is inadequate and too focused on near-term problems**…

- …and makes the following recommendation: **Create a strategic initiative in long-term information technology R&D**, increasing the total funding base by $1.37 billion per year over the next 5 years.

- PITAC identifies four areas of information technology research that need priority attention:

1. **Software** – "The demand for software has grown far faster than our ability to produce it. Furthermore, the Nation needs software that is far more usable, reliable, and powerful than what is being produced today. We have become dangerously dependent on large software systems whose behavior is not well understood and which fail in unpredicted ways."

2. **Scalable Information Infrastructure** – "…the Internet is growing well beyond the intent of its original designers and our ability to extend its use has created enormous challenges. …it is imperative that we do the necessary research to learn how to build and use large, complex, highly-reliable, and secure systems."

3. **High-End Computing** – "To ensure that U.S. scientists continue to have access to computers of the highest possible power, funding should be focused on innovative architectures, hardware technologies, and software strategies that overcome the limitations of today's systems. Without major increases in funding in these areas, the realizable performance of new machines will fall far short of their potential."

4. **Socioeconomic Impacts** – "Our National well-being depends on understanding the potential social and economic benefits of ongoing advances in information technology. However, problems are arising from the increasing pace of information technology-based transformations. To realize the promise of the new technologies, we must invest in research to identify, understand, anticipate, and address these problems."

- The report emphasizes the essential government role in supporting pre-competitive IT research and explains why industry cannot be expected to support long-term research: **the intense pace of the information technology marketplace and the equally intense competitive pressures on prices and profit margins necessitate that information technology firms focus on short-term objectives**.

## Excerpts from the PITAC Report

**"The Government's Essential Role"**

"The PITAC Members from industry were unanimous in their opinion that it is not feasible for the private sector to assume responsibility for long term high-risk research, in spite of the success of the information technology industry."

"We cannot rely on industry to fund the needed research because they necessarily focus, in view of economic realities, on the short term. Industry cannot and will not invest in solving problems of importance to society as a whole unless such investments make sense from a business perspective."

"We believe that the Federal Government must retain and expand its role in leading long-term fundamental research in information technology. Advanced Government services and national security depend on it. The benefits to our Nation and society will be huge. A loss of international leadership in information technology would be economically devastating."

"Only through research on a scale substantially greater than is being carried out today, can we build an infrastructure that will be available, affordable and usable by all citizens…."

**"PITAC Industry Member's Rationale for Government Support of Long Term, Fundamental Research"**

"Our PITAC report shows that as information technology has grown to be an extremely successful segment of the economy, and more important to the future of the economy and the government, it has outpaced the research budgets available to support it. At a time when we need more fundamental understanding of information technology, and more long term, high-risk projects, tighter overall budgets and near-term market pressures are squeezing research budgets."

"Since World War II, the Federal government has funded advanced information technology research to meet its own requirements, which have ranged from critical national-defense applications to weather forecasting and medical sciences. Federal funding has seeded high-risk research and yielded an impressive list of billion-dollar industries (such as the Internet, high performance computers, RAID disks, multiprocessors, local area networks, graphic displays, etc.)."

"Past Government investments in high-risk research have helped fuel the intense pace of the information technology marketplace. The U.S. has the most energetic, viable and productive technology transfer mechanism in the world. Ideas freely flow from universities and national labs to existing and new companies. In 1998, over $12 billion dollars were invested by venture funds in new companies. The basic feedstock for these investments has been Government support of basic information technology research. If this feedstock is allowed to deplete, this economic growth engine could slow or disappear."

"The information technology industry expends the bulk of its resources, both financial and human, on rapidly bringing products to market. Nearly every available person and dollar in this industry is focused on bringing the next version or the next product to market. Delivery product cycles are as short as every three to six months. The company that fails here misses the next short-term cycle and will not be successful."

"For information technology companies, the fraction of the total budget devoted to R&D is roughly twice the U.S. industry average. Over 90 percent of information technology R&D expenditures are allocated to product development, with the major portion of the remaining expenditures going toward near term, applied research."

"The United States must not only continue, but also substantially increase, long-term fundamental information technology research programs. Once innovative research ideas have been explored, American companies are well positioned to seize the viable ideas, commercialize and distribute them. The government must increase its investment in the pipeline that generates these ideas and the researchers to work on them. This will create a better society and bring even greater prosperity to our nation."