

**Funding the National Center for Research in
Advanced Information and Digital Technologies
An Effective, Immediate Economic Stimulus
That Provides a Major Return on Investment and Transforms
Americans' Learning, Workforce Training and Education for the 21st Century**

The National Research Center, authorized by an overwhelming, bipartisan vote of Congress and signed by the President last summer, represents a rare triple immediate win opportunity for the United States. Funding the National Research Center will provide a significant return on the public's investment. Enhancing information and digital technology and spreading the competence and ability of the American people to use them at school, at work, and in the home, reduces costs, increases productivity and stimulates further economic activity, thereby magnifying the impact of every dollar spent.

With a modest appropriation to start the already authorized National Research Center, the US can implement a program that immediately generates economic activity; increases demand for additional economic activity and at the same time builds a healthier nation over the long-term. Few programs can meet these multiple objectives better than an investment in the new National Research Center.

Economists may debate the efficacy of tools available to reinvigorate the economy but none will question that each US dollar spent developing the domestic intellectual infrastructure of information and digital technologies – software for learning and training – will immediately generate more than one dollar of gross domestic product and also generate significant additional economic activity in the near term. Over a longer period, the likely benefits to our country will be much larger still.

Virtually every dollar spent on the new National Research Center, the first new national research institution established by Congress in many years, will go to support increased US domestic economic activity. The dollars will go for wages to American corporate, academic and independent researchers and software developers, the purchase price of advanced learning technologies, and licensing fees to software providers.

With those expenditures comes a positive externality – the enormous competitive benefit to the US economy not accounted for simply in the transaction between the buyer and the seller of those goods or services. In the words of the legislation, “The purpose of

the Center will be to support a comprehensive research and development program to harness the increasing capability of advanced information and digital technologies to improve all levels of learning and education, formal and informal, in order to provide Americans with the knowledge and skills needed to compete in the global economy.” The newly funded National Research Center can serve as the research underpinning of the Congress’ and new Administration’s educational reform efforts. As the new President’s plan said, “We cannot ensure we’re ready for the economic challenges of the 21st century if our schools and learning systems are firmly planted in the 20th century.”

The researcher who shows teachers how to utilize effective new software to open young students’ minds to math and science, will take home his day’s wages, paid in part by a National Research Center grant or contract, and also will help produce students who may change their world. Such a student, when she develops a technology that improves the efficiency of the Internet, or creates software that explores history and the world’s diverse cultures, or makes new educational or training software available through the Internet at little or no cost, could save the US billions of dollars per year. The medical center that will build a server to put its library and its intellectual product on the web and will turn texts into powerful multimedia digital learning demonstrations and simulations, spends the dollars it will get from the National Research Center on wages, equipment, real estate and other necessities of its program. Then, the thousands of health care providers who gain access to those libraries and new know-how made possible by National Research Center grants, will save lives, improve the quality of life and reduce health care costs to countless thousands served by that knowledge. The inner-city grade school that works with a local not-for-profit enterprise to enrich and expand training and reaches into the homes of children in need with basic new learning technologies will spend its National Research Center dollars on wages, services, logistics, and software. The children attending that school will then have a better chance of graduating from high school and going on to college than similar children not served with newly developed learning simulations and software.

It is easy to see how the leverage gained from encouraging advances in learning technology can multiply each dollar invested into more than one dollar of economic activity. Not so easy to quantify are the high-impact, rare transformative breakthrough events, perhaps even comparable to the adaptation of the Internet for civilian use, that are

likely to come out of such a public interest project if it is launched well, funded adequately and carried on for some time. These are the discoveries of ideas, technologies and genius boxed up right in front of us, or locked in the shelves of our libraries, or exhibited inside the walls of our museums, that await someone to open the box and move them directly into classrooms, training centers, and even the homes of millions in the inner city or remote rural communities. We know many of these stories. The global positioning system (GPS) used now by aircraft, trucks, surveyors, hikers, and ordinary car owners, arose out of NASA's satellite technology. The Internet itself, which has revolutionized virtually every aspect of our society, was developed for civilian use by the taxpayer-funded National Science Foundation, based on nuclear defense research initiated by DARPA for the Department of Defense.

Or take the case of one of the world's leading mathematicians of the last century, the legendary Srinivasa Ramanujan. Born poor and raised in Tamal Nada, India without formal mathematics training, Ramanujan made his way onto the world stage via Cambridge University in part because of the rare perceptiveness of Cambridge mathematician G. H. Hardy who recognized something brilliant in Ramanujan's mathematical scribbles, incomprehensible to almost everyone other than himself and Hardy. How many more Ramanujans hide among us, waiting for a window onto the world's stage, from which they will change our world? There are endless examples of high-impact, rarely surfacing externalities that cannot be foreseen now or even imagined but that can in aggregate just about be guaranteed to occur in a properly funded and run national research environment such as NSF, DARPA, NIH, and now the new National Research Center that will focus on transforming education, learning and workforce training.

The instant, interactive communications capacity of the newly developing digital world allows both hidden geniuses and ubiquitous ordinary hard workers to gain access to the platforms that are best suited to maximize their talents and improve the public weal. Few places can be found where a dollar of investment will more surely generate both immediate economic activity and long-term public gain than the dollar invested in advanced information and digital technologies research designed to transform skills training and lifelong learning at all levels for all of our people.