FY 2010 Funding Request for the National Center for Research in Advanced Information and Digital Technologies

Legislative Background:

The National Center for Research in Advanced Information and Digital Technologies was included in the College Opportunity and Affordability Act, H.R. 4137, the bill that reauthorizes the Higher Education Act. It was signed into law by President Bush on Aug. 14, 2008 (P.L. 110-315).

Funding Request:

$50 million for the program in FY 2010. The National Center for Research in Advanced Information and Digital Technologies will be structured as a Congressionally-originated 501(c)(3) nonprofit corporation with a Board initially appointed by and reporting to the Secretary of Education. Grants and contracts will be awarded on merit.

The Challenge:

America's future depends as never before on providing a first rate education to all its citizens. Constant innovation is essential to our nation's ability to compete in a tightly connected world economy, our ability to face unprecedented challenges in energy security and climate change, and our ability to ensure national security and homeland security. This is particularly true in the digital, global information age.

New tools are essential for delivering a solid foundation of knowledge, critical thinking ability, and skills needed to work effectively in the dynamic workplace of the 21st century. These tools must serve an enormously diverse population at a price we can afford. Fortunately, such tools are now available. New advanced information technologies have revolutionized the way we acquire information and communicate. Enterprises that make effective use of these new tools have driven U.S. productivity gains over the past few years.

Unfortunately, with very few exceptions the new information tools have yet to make a significant impact on U.S. education and training. Technology that has been hugely effective in streamlining business communications, tailoring products and services to individual interests, supporting social networking, and providing games and other entertainment experiences is not easy to convert for use in education and training. The Department of Defense, which leads in employing advanced information systems to train our troops, has demonstrated the efficacy of doing so on a large scale. But those technologies have not, by and large, found their place in the domestic economy or in our educational systems.

One of the most important reasons technology has not been effectively used to address key U.S. needs in lifelong learning and skills training is that we have not made the investment in research needed to understand how simulations, inquiry management, performance-based tests, and other potentially revolutionary approaches to instruction can achieve learning gains. And, unlike other nations including Japan, China, Ireland, India, to name a few, we haven't invested in the cycle of development, testing, and adaptation needed to convert research concepts into practical tools to help a diverse student body develop demonstrable expertise.

Corporate investment in relevant research has largely been limited to investment in Defense training and specialty markets such as training for pilots and surgeons. Because the nation's manifold education markets are notoriously difficult to penetrate, firms with a strong track record in research-driven innovation in advanced information technology have been reluctant to invest. Textbook companies and other traditional suppliers for education institutions have little tradition of research in these new relevant fields and they, too, have been unwilling to make the major investments needed.

The federal government has launched major research programs in other essential, high priority fields such as health, energy, agriculture and defense technology, where the national benefits of research, development, and demonstration far outstrip private research investment. As the *Gathering Storm* report points out, there is a unique and essential role for basic federally-sponsored research for

pre-competitive, high-risk, long-term projects that will spur educational innovation. The National Center will help fulfill that need in education and workforce skills training, so vital in a knowledge-based economy.

Unfortunately, most other industrialized countries do much better than the U.S. when comparing educational performance and the productivity of educational spending. With respect to educational achievement, the position of the U.S. relative to other countries is deteriorating. While the U.S. ranked 22nd among 27 industrialized countries in the 2000 PISA math study, it ranks 24th of 29 countries in the 2003 study.

The Potential:

The potential is extraordinary. The Department of Defense has shown repeatedly that technology-based instruction increases training effectiveness by about one-third and reduces time to learn by about one-third. But DoD's enthusiasm is driven by proven "operational effectiveness" – meaning the ability of people to walk out of classroom and distant learning instruction and be immediately effective as a part of an operational team.

Furthermore, research shows that new technologies can help capture and hold students' attention and convey complex information quickly in formats that students and teachers alike find highly effective. These technologies can help speed learning and ensure that a higher proportion of students – particularly in remote and rural areas – reach higher levels of competence.

The Solution:

A major national research investment in technology for learning is essential to ensure that all Americans – including Americans already in the workforce – have the expertise needed for American prosperity in the exciting, but difficult economic environment of the 21st century. The National Center for Research in Advanced Information and Digital Technologies will initiate such investments. The National Center will:

- Provide financing for research, development, and demonstration of advanced information technologies that can transform education, skills training, and lifelong learning just as the National Science Foundation and the National Institutes of Health have done so effectively in their fields.
- Build multi-disciplinary teams that mobilize the skills in America's schools, colleges, universities, museums, libraries, public broadcasting entities and other similar organizations, as well as the corporate sector to achieve these goals.
- Support the testing and evaluation of these systems, and encourage the widespread adoption and use of effective approaches to learning.

The investment in the National Center will be an extraordinarily efficient and effective use of federal funds, since it will certainly result in economic development worth many times the federal investment of resources.

FY 2010 funding will be used as follows:

- $1.2 million for direct staff costs to begin the operations of the National Center.
- $.9 million for IT support, rent.
- $120,000 for travel, supplies, etc.
- $ 47.780 million to be awarded as grants and contracts for research, development, and demonstration of advanced information technologies; building multi-disciplinary teams; and testing, evaluation, and advancement of these systems.