**Opening Statement**
**Rep. Daniel Lipinski (D-IL)**
**Ranking Member**
**Subcommittee on Research**
**House Committee on Science, Space, and Technology**

**Committee Hearing:**
*Applications for Information Technology Research & Development*
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Thank you Chairman Bucshon for holding this hearing. And congratulations on being selected to chair this subcommittee.

The House has passed bipartisan legislation reauthorizing the NITRD program in the past two Congresses, so I believe that we can get something done again this Congress. Hopefully the third time is the charm for the Senate.

The most problematic issues threatening the NITRD program right now are the cuts and uncertainty in top-line R&D budgets. While reauthorizing NITRD wouldn't solve these problems, it would signal the government's continuing interest in investing in these critical research areas, and in partnering with industry to help set R&D and workforce training priorities that prepare our nation for the future.

The NITRD program evolved from a federal program established under the High Performance Computing Act of 1991. That Act provided the funding that led to the development of Mosaic in 1993, the World Wide Web browser that made the Internet user-friendly and led to its explosion in the 1990s. I am proud to note that Mosaic was created by a team of programmers at the federally funded National Center for Supercomputing Applications at the University of Illinois. Netscape founder Marc Andreeson, who was a leader of the Illinois team before launching his company, was quoted as saying, "If it had been left to private industry, it wouldn't have happened, at least, not until years later." Without question the 1991 Act set the stage for a coordinated federal R&D investment strategy that has underpinned U.S. leadership in networking and information technology over the past two decades. In Illinois, that leadership in R&D is helping to complete work on the Blue Waters project, a petascale supercomputer that will maintain the University of Illinois's position at the forefront of high performance computing research.

But as with many other areas of R&D, we can no longer take for granted U.S. leadership in NIT. As noted by Dr. McKinley in her testimony, China, Japan, Germany, and several other countries are increasing their investments in NIT R&D, and in their capacity to convert R&D into new commercial technologies. As we heard from witnesses at a hearing on US Competitiveness last week, R&D no longer occurs in a simple linear progression from basic research to commercial product. There may be a clear role for the government in basic research, including use-inspired basic research, and a clear role for industry in the last 1-3 years of product development work. But there are multiple gaps between those efforts, and our economy benefits exponentially when our R&D portfolio includes partnerships that facilitate collaboration among universities, national

labs, and industry. This applies as much to NIT as to any other area of R&D. In fact, historically, some of the most economically important public-private partnerships have been in the NIT sector.

We must also join forces in addressing NIT education and workforce challenges. While the federal government has a role here - and I'd like to hear our witnesses' input on that - this is a problem that also demands the attention of state and local government as well as the private sector. As I have noted several times in the past, I am concerned about trends in outsourcing of even high-skills jobs. At the same time, however, we hear anecdotally of thousands of U.S. NIT jobs that go unfilled due to a lack of qualified applicants.[1] There is no doubt we need to do a better job overall in preparing our students for jobs of today and the future, and in particular we need to graduate more computer science majors.

Finally, because PCAST discusses this topic in their latest review of NITRD, I want to bring up educational technology as a possible topic of discussion for this hearing. By that I mean R&D on technologies to improve learning outcomes and increase access to high-quality education, including STEM education. One of the hottest topics today in higher education is Massively Open Online Courses, or MOOCs. Many of the MOOC courses are in computer science and engineering. I wonder how this is changing the NIT education landscape, as well as what the implications and opportunities are for education research. But this is also an expansive enough topic on its own that maybe Chairman Bucshon will consider holding a separate hearing to look more carefully at these issues.

With that, I want to thank all of the witnesses for being here today, and in particular Dr. Lazowska who is becoming an old hand at this by now. I look forward to all of your testimony.

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[1] [Dr. McKinley cites 3,400 unfilled research and engineering positions at Microsoft alone.]