

Oral Testimony of Kathryn S. McKinley, Microsoft

**BEFORE THE HOUSE SCIENCE, SPACE AND TECHNOLOGY COMMITTEE
SUBCOMMITTEE ON RESEARCH AND SCIENCE EDUCATION**

**HEARING ON APPLICATIONS FOR INFORMATION TECHNOLOGY RESEARCH AND
DEVELOPMENT**

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Chairman Bucshon, Ranking Member Lipinski, and Members of the Subcommittee, thank you for inviting Microsoft to testify and your attention to how IT innovation helps the nation create jobs and grow our economy.

My experiences with the National Science Foundation, the National Academies, DOE, and DARPA, and as an Endowed Professor at the University of Texas at Austin, and my current role as a Principal Researcher at Microsoft inform my testimony.

First, I would like to point out that an interconnected IT research ecosystem has made the U.S. the world's leading economy with the best defense capabilities. The results of IT research include new billion dollar industries that create jobs and make us safer, healthier, more efficient, and delight us.

One example is the Microsoft Xbox 360 Kinect. With Kinect, your voice and body are the game controller. Kinect combines decades of Microsoft research with other research on artificial intelligence, graphics, motion detection, and voice recognition. New technologies inspire further innovation and Kinect is now advancing learning, health, and retail.

Kinect exists because Microsoft's business strategy is to make long-term investments and bets. 20 years of investment has made Microsoft Research the largest and most successful computing research organization in the world. Yet Microsoft thrives as part of a larger research ecosystem with government, industry, and academia.

Key IT research areas for our nation and for NITRD include big data, privacy, and building trustworthy systems.

A particularly important research challenge that I work on is that your computer is no longer getting faster every year. In the past, the doubling of performance every two years drove new computing capabilities and accelerated innovation. Unfortunately, current technology is up against some fundamental limits, and no new technologies are ready to overcome them.

The technical challenges are **compounded** by global competition. Substantial investments in Asia and Europe have increased their contributions to the research ecosystem and their participation in the global IT economy. While the U.S. still enjoys an edge, the gap is narrowing.

Significant research investments in areas such as semiconductors, materials, architecture, and programming systems are needed.

If the overall rate of innovation slows, it will be easier for other countries to close the gap, and the U.S. will lose its economic and national security advantages.

Let's talk about education. Technology is and will infuse all aspects of life in the 21st century. People who understand IT will flourish in the global knowledge economy. The U.S. computing workforce demands are outpacing its supply. 40 thousand people earned a computing bachelor degree last year, yet the U.S. is projected to have 120 thousand jobs each year that require these skills. The U.S., including Federal agencies, must strengthen computing education at all levels, including K 12 to fill these jobs.

A particular challenge in computing is the limited participation of women, Hispanics, and African-Americans. My community, through efforts such as the Computing Research Association, where I am a Board Member and Committee co-chair of CRA-W on the Status of Women in Computing Research, has programs that are proven to increase the success of women and minorities by mentoring master's and PhD graduate students and giving undergraduates research experiences, but we need more success stories.

The U.S. simply cannot afford to fail to capitalize on the creativity of 70% of its population if it wants to remain globally competitive. The IT knowledge economy depends on the flow of the best people and ideas between academia, government, and industry.

I would like to finish with a little of my own story.

I did not go to college intending to become a researcher or even to study computing. (I come from a family of lawyers!) I took a computer science course, and then Professor Don Johnson at Rice University hired me for a summer research project. That experience opened my eyes to the excitement of solving problems where no one knows the answers, and that that could be my job.

This tight integration of research and education makes U.S. research universities the best in the world.

I thank you for this opportunity to testify, and your committee's long standing support for IT research, discovery, and innovation.