It is a privilege and a pleasure to welcome all of you to Georgia Tech. We are honored to host this hearing of the Deemed Exports Advisory Committee.

Four years ago, on the occasion of the 200\textsuperscript{th} anniversary of the historic cross-country journey of Meriwether Lewis and William Clark, I took a boat trip up the Columbia and Snake Rivers, retracing part of their trip. And as we went, I read their journal. That trip helped me understand the rich heritage this nation has of exploration, discovery, and risk taking. Beginning with the earliest pioneers, Americans have always looked for new frontiers and imagined a better future. Today, instead of the geographic frontiers Lewis and Clark explored, our new frontiers lie in the realm of science and ideas. But the process of exploration, risk taking, and discovery is just as essential to our future as a nation in the 21\textsuperscript{st} century as it was when Thomas Jefferson sent Lewis and Clark on their journey in 1803.

I have the privilege of serving on the President’s Council of Advisors on Science and Technology. And the same year I took that boat trip commemorating the Lewis and Clark expedition, I also served on a PCAST panel that looked at the Science and Technology of Combating Terrorism. That panel was a reminder that many of the fundamental characteristics that drive exploration and discovery have the potential to be at odds with homeland security. And even as our future prosperity depends increasingly on scientific exploration and discovery, we are facing the need to re-balance freedom and risk-taking on the one hand against national security on the other.

Fundamental research, which in the United States is conducted primarily at universities, thrives in an environment of openness and collaboration. National Security Decision Directive 189 from back in the 1980s recognized that, saying, “No restriction may be placed on the conduct or reporting of federally funded fundamental research that has not received national security classification.”

However, after the terror attacks of September 11, 2001, the federal government began to tighten restrictions on unclassified federally funded research and the number of complaints from universities began to grow. Which brings me to a third thing that happened in 2003 – the American Association for the Advancement of Science conducted a study on these new restrictive clauses. What they found was that in some cases universities decided to forego federal money altogether rather than accept restrictions. MIT, for example, turned down more than $400,000 in federal funding for their Artificial Intelligence Lab because it would have required the federal government to approve all employees. However, in most cases, universities have responded by engaging in a negotiation process to modify the language to be more acceptable. And in most cases, these negotiations have delayed the start of the research projects.
The AAAS wasn’t the only organization raising a red flag. AAU and COGR also weighed in, stressing that university research is based on a free exchange of knowledge, and unless it was classified, fundamental research conducted by universities should remain unrestricted.

The federal government spends $25 billion a year on university research. These funds are distributed by a wide range of agencies and departments, including NASA, the NIH, NSF, NRC, DARPA, NIST, and the Departments of Energy and Agriculture – to name a few. Some of these agencies and programs have taken the initiative – or have felt they are required – to add new restrictions to their research contracts. These restrictions might include a designation indicating that although the research is unclassified, it is still sensitive, or that foreign nationals are restricted from participating. The Department of Homeland Security, responding to security concerns for its research activities, has also added restrictions specific to its research.

When this many cooks are stirring the stew, what it boils down to is that there is no consistent policy. What the Department of Energy finds acceptable today, the Department of Homeland Security may find unacceptable tomorrow. What is legitimate to NSF may be objectionable to NASA. Rather than having a reasonable, workable policy that is consistent across the board, research universities are put in the difficult position of enforcing different sets of restrictions and constraints for different research contracts. To give you an idea of how cumbersome this can be, Georgia Tech presently has more than 1,100 active research projects funded directly by federal agencies.

The Georgia Tech Research Corporation basically has two tracks for administering research contracts – classified and unclassified. And while we have tried to work out difficulties with restrictive clauses, it is creating problems. Constraints and restrictions are being imposed on unclassified projects that mirror many of the restrictions that must be imposed in managing classified research. When a funding agency imposes a restriction on the use of foreign nationals in the research, we are forced to exclude students from those projects, which is detrimental both to the student and to the Institute. That is why research universities were so gratified last year when the Department of Commerce acknowledged the concerns raised in more than 300 comment letters from people like me and modified its proposals for additional restrictions regarding deemed exports.

I have heard representatives of the federal government articulate their conviction that nations who do not wish us well are placing graduate students and faculty at our universities in order to take advantage of the opportunity to work on sensitive research to the benefit of their home countries. And I do not doubt that there is truth in that statement. But at the same time, we also need to face the reality that if the United States adopts a bunker mind-set and cuts itself off from the international community of academic research and researchers, we will be the losers.

Back in the days when the threat of the Cold War was looming ominously over us, we essentially had this same discussion. And we realized the folly of isolating ourselves at that time. This time around, the penalties for cutting ourselves off will be even harsher. What happened with satellites during the 1990s is illustrative. The United States used to have the world market cornered on launching satellites. Then other nations began to develop their own technological capabilities, and at the same time we began to make it increasingly difficult and cumbersome for
them to work with us. As a result, the rest of the world simply by-passed us and did it themselves.

Part of the reason the United States emerged as the world’s undisputed leader in science and technology during the 20th century was that, through no efforts or intents of our own, we became a magnet for the world’s best talent. One of the unintended consequences of the political events of the day was that a disproportionate number of the world’s brightest minds were looking to escape Nazism in Germany, or the rising tide of communism in the Soviet Union, or the lack of opportunity caused by poverty, war, and political instability in other parts of the world. And they came to the United States of their own volition.

Today both Nazism and the Cold War are gone, and nations like India, China, and Russia are upgrading their universities and increasing economic opportunity at home. At the same time, the United States has made it more difficult for bright students and academics to obtain visas, and those who still manage to come here are handicapped by deemed export policies. If they no longer feel welcome here, where will they go? Who will have the benefits of their talents if not the United States?

America has a rich heritage of entrepreneurism that propelled us to the forefront as the most prosperous and powerful nation in the world. But it is growing clear that the rules have changed. We are standing on the brink of a new industrial order with clear potential for the 21st century to be the age of Asian economic ascendancy.

The global economy is moving at warp speed, and the development of new products is no longer a linear process, but involves interaction between R&D operations, manufacturing operations, and consumers. The companies with the competitive edge are increasingly the ones that can locate their research and manufacturing facilities close to each other, close to major research universities, and close to their growth markets all at the same time. As nations like China and India develop world-class universities and skilled workforces, high-tech corporations are moving their research and development facilities there. Microsoft’s biggest R&D facility is not in Seattle, but in Beijing, China. DuPont’s largest capital investment outside the United States is in China. GE’s Jack Welch Research Centre in Bangalore, India, employs 2,500 scientists, and GE is building a $250 million medical facility in New Delhi.

Here at Georgia Tech, we are building international partnerships. We have had a campus in Metz, France, for more than 15 years. We have a research and education platform in Singapore, and a research and development platform in Ireland. We have dual degree programs and partnerships with universities from Great Britain to Mexico, from Germany to China. These partnerships are growing, and they are essential to success in a global economy driven by innovation. Deemed export restrictions have the potential to hamper them and make them more difficult.

In this new, highly competitive global game, it would be unrealistic for the United States to think that we will continue to dominate the high-tech end of the economy as we have in the past. We will no longer have the world’s largest technology market and technological workforce. Our wages and health care costs are higher than those of our global competitors. And we can expect
to produce only one of every four or five major inventions. It will be difficult enough to compete in this environment without handicapping and isolating ourselves with any more restrictions than are absolutely essential.

In January of 2006, I was privileged to attend the U.S. University Presidents Summit on International Education, convened by Secretary of State Condoleezza Rice and Secretary of Education Margaret Spellings. From the perspective of the two secretaries and President Bush, the focus of that summit was on student exchanges and the need for Americans to learn more foreign languages as a contribution to our nation’s security. But for the university presidents who came to Washington for the summit, the foremost issues in our minds revolved around deemed exports and visas for international students. And we were pretty unanimous on this issue. We understand the importance of national security, and we want the federal government to build high walls around small places – to define clearly those specific matters that are absolutely essential to national security and protect them vigorously – but then to allow openness in all other areas.

For example, to define “nanotechnology” as a matter of national security is being far too broad and puts American competitiveness at risk. The U.S. government spends a billion dollars a year for nanotechnology research, but so does the European Union. So does China. So does Japan. If the burden of compliance gets too high, the research will go to these other places. If the constraints on the best graduate students and faculty become too onerous, they will go to these other places. And the United States will be left behind as other nations overtake us on their way to world scientific and technological leadership.

We clearly need to take a comprehensive look at the type and level of restriction that is truly essential for national security, and then forge a new agreement between universities and government that balances openness on the one hand and security on the other as they relate to university research. So I want to thank the Deemed Exports Advisory Committee for honoring our nation’s best democratic tradition and holding a series of meetings to hear from those who have a direct stake in this issue. I believe that these hearings are an important step in the essential process of finding the balance-point that enables us to be on the leading edge of a global economy driven by innovation.