



BARRIERS TO U.S. SCIENCE AND TECHNOLOGY LEADERSHIP

SPIE—The International Society for Optics and Photonics, supports the recommendations put forward in the *Beyond Fortress America Report* issued by the Committee on Science, Security, and Prosperity; Committee on Scientific **Communication** and National Security of the National Research Council in January 2009. SPIE also agrees with many of the findings of experts who testified before the House Science & Technology Committee on February 25, 2009 concerning potential damage being done to the nation’s economic well-being through unintended consequences of current export control regulations and policies.

It is time to reform outdated rules and regulations that govern the movement of photonics and optoelectronics goods, services and talent across borders. SPIE advocates an updated regulatory scheme that recognizes the importance of U.S. security interests while at the same time protecting the economic interests of U.S.-based industries and universities.

Overly restrictive regulation on the export of dual-use technologies, visa issues, and the inconsistent interpretation/enforcement of regulations have created business, education, and research barriers that are limiting U.S. leadership in science and technology. The *Fortress America Report* concluded that national security controls that regulate access to and export of science and technology are broken and stifle American engagement in the global economy and in science.

According to former U.S. National Security Advisor, Lt. General Brent Scowcroft, USAF (Ret.) who also served as Chairman of the President’s Foreign Intelligence Advisory Board under President George W. Bush:

- Export controls constrain both U.S. commercial and military capabilities from expanding into new fields and from applying new scientific developments
- The government’s rules are accelerating the development of technologies in capable research centers outside the United States
- As foreign companies and governments fill competitive gaps, valuable technical developments occur outside the U.S. to which the U.S. military and intelligence agencies then have no access
- U.S. scientists are hobbled by rules that prevent them from working with world-class foreign scientists and laboratories making it less likely that discoveries will occur in the U.S.
- The government’s rules are driving jobs abroad—knowledge-intensive jobs that are critical to the U.S. economy.

This report articulates the need for the U.S. S&T sector to “run faster” by anticipating and capitalizing on research breakthroughs. In policy terms; running faster means having a well administered, agile system of national security controls that can adapt quickly to the changing geopolitical and technological landscapes.

Key Findings and Recommendations from Beyond "Fortress America" National Security Controls on Science and Technology in a Globalized World

http://books.nap.edu/catalog.php?record_id=12567

Finding 1. Designed for the Cold War when the U.S. had global dominance in most areas of science and technology, the current system of export controls now harms our national and homeland security, as well as our ability to compete economically.

- A. In almost all cases, the technology base that supports our national security also supports the high-technology sector of the civilian economy.
- B. Many controls imposed in the name of national and homeland security do not, in fact, improve national and homeland security.
- C. Many current controls (outside of narrow military niches) aimed at protecting national security, in fact weaken U.S. innovation and competitiveness in global markets, thereby reducing economic prosperity, which is an essential element of U.S. national security.

Finding 2. The system of export controls on the international flow of science, technology, and commerce is fundamentally broken and cannot be fixed by incremental changes below the presidential level.

- A. For most of the last twenty years, the executive and legislative branches of the federal government have failed to come to agreement—either internally or with each other—on dual-use export control policy. This failure has led to unnecessary vulnerabilities in our national security and in our economic competitiveness.
- B. The current list-based systems are unwieldy, slow, difficult to administer rationally, and are overly proscriptive given global developments in science and technology.
- C. The lack of multinational consensus among our allies about export controls further reduces the effectiveness of unilateral U.S. actions.

Finding 3. U.S. national security and economic prosperity depend on full global engagement in science, technology, and commerce.

- A. Highly capable centers of scientific research excellence and industrial innovation have been developed in many foreign countries over the past 20 years; the U.S. maintains scientific leadership in some areas, and it is hotly contested or has been lost in others.
- B. Global information exchange via the Internet, the increased speed of science and technology advancement, and the strategy of “run faster” are all incompatible with our existing systems of regulating the movement of people, ideas, components, and products.

Recommendation 1. The President should restructure the export control process within the federal government so that the balancing of interests can be achieved more efficiently and harm can be prevented to the nation’s security and technology base; in addition to promoting U.S. economic competitiveness.

Recommendation 2. The President should direct that executive authorities under the Arms Export Control Act and the Export Administration Act be administered to assure the scientific and technological competitiveness of the United States, which is a prerequisite for both national security and economic prosperity.

Recommendation 3. The President should maintain and enhance access to the reservoir of human talent from foreign sources to strengthen the U.S. science and technology base.

SPIE is the largest international not-for-profit society in optics, photonics and imaging. Together with our 17,000 individual members and 450 corporate members, the Society seeks to build a better world with light through scientific education and innovation. www.spie.org.