

Comments of the  
Semiconductor Industry Association (SIA)  
On  
The Strategy for American Innovation  
September 23, 2014  
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The Semiconductor Industry Association (SIA) appreciates the opportunity to submit comments in response to the Request for Information from the Office of Science and Technology Policy (OSTP) and the National Economic Council regarding the White House Strategy for American Innovation.

SIA is the voice of the U.S. semiconductor industry, one of America's top export industries and a key driver of America's economic strength, national security and global competitiveness. Semiconductors – microchips that control all modern electronics – enable the systems and products that we use to work, communicate, travel, entertain, harness energy, treat illness, and make new scientific discoveries. The semiconductor industry directly employs nearly a quarter of a million people in the United States. In 2013, U.S. semiconductor company sales totaled \$155 billion, and semiconductors make the global trillion dollar electronics industry possible.

No industry has a greater reliance on and commitment to the future of American innovation than the U.S. semiconductor industry. Semiconductors were invented in America, and the U.S. still leads the world in cutting-edge manufacturing and design. One of the principal benchmarks by which the semiconductor industry measures its technological advancements is Moore's Law, which states that the number of transistors on a semiconductor doubles every 18 to 24 months. Thirty years ago, an advanced semiconductor had about 100,000 transistors. Today, microprocessors that operate in the 5 GHz range are about one thousand times faster and have more than a billion transistors. As a result of Moore's Law, the price of end products like PCs and smart phones decreases while performance increases.

In the semiconductor industry and across the broader tech sector, Moore's Law and other innovations are made possible through the hard work and ingenuity of tech workers and smart public policy from the federal government. At SIA, a common theme of the initiatives we support – policies to drive innovation, research programs of our affiliated organizations, etc. – is that all of them are intended to maintain and accelerate technological advancements. The federal government plays a vital role in furthering these initiatives.

To help remove barriers to innovation and ensure America's continued technology leadership, policymakers should take action on the following five initiatives:

**1. Support federal funding for university research.** If there's one thing history has taught us, it's that nothing can stop the forward march of innovation. But one thing that can slow it down is a failure to invest in research, the lifeblood of innovation. Funding for basic scientific research has enabled some of the most revolutionary inventions of the last 60 years, including the Internet, the Global Positioning System (GPS), the laser, and the large-scale integrated circuit. These technologies haven't just improved our everyday lives; they have helped build a healthier, cleaner, stronger America.

Unfortunately, U.S. investments in R&D as a share of GDP have decreased in recent decades. For example, the percentage of U.S. gross domestic expenditures on R&D funded by the government declined from 47.1% in 1981 to 33.4% in 2011. Furthermore, over the last 10 years, R&D expenditures as a share of economic output have remained nearly constant in the U.S., but have increased by nearly 50% in South Korea and nearly 90% in China. Policymakers should reverse this trend by supporting funding for basic scientific research programs at federal agencies such as the National Science Foundation (NSF), the National Institute of Standards and Technology (NIST), the Defense Advanced Research Projects Agency (DARPA), and the Department of Energy (DOE) Office of Science.

**2. Strengthen America's technology workforce.** For too long, America's outdated and ineffective immigration system has been a barrier to innovation, forcing highly educated immigrants – many of whom have advanced degrees in the STEM fields from America's top universities – to leave the U.S. because they are unable to obtain visas. This system undermines America's economic strength and global competitiveness by preventing U.S. companies from recruiting and retaining the world's best innovators. Indeed, many of these highly skilled workers move abroad and work for competitors of American companies.

Policymakers should reform the high-skilled immigration system to create American jobs and boost U.S. competitiveness. With U.S. businesses' increasingly urgent need for access to the world's top talent, and burgeoning competition from competitors abroad, the time for action on immigration is now. In the absence of congressional action on comprehensive immigration reform, the President should take executive action to address some of the problems with our green card system.

**3. Facilitate open markets.** As the semiconductor industry continues to expand to new areas across the globe, it has never been more important to promote free and open international trade. SIA continues to work to achieve broad duty-free coverage of advanced semiconductor technologies in the updated Information Technology Agreement (ITA). In the pending

negotiations on the Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP), the U.S. should advance strong protections for trade secrets and strong encryption language that commits signatories to not restrict the import, use, and sale of products containing encryption for the commercial market.

**4. Reform the corporate tax system.** America's tax structure lags behind many other countries' systems, blocking possible pathways to innovation in the U.S. A more competitive tax structure would grow investments, create jobs, and spur economic growth. To level the playing field, policymakers should 1) reduce the corporate tax rate to align more closely with globally competitive rates; 2) adopt a territorial tax system similar to those used by most global competitors; and 3) enact permanent, robust incentives for research and innovation competitive with other countries. As a first step, the Congress must extend (and strengthen) the R&D tax credit that lapsed last year.

**5. Safeguard intellectual property.** Intellectual property is the lifeblood of the U.S. semiconductor industry. Semiconductor companies invest on average 22 percent of revenues for research and development, the highest percentage of any industrial sector. This investment results in trade secrets and patents (semiconductor companies comprise 6 of the top 15 patent recipients), and this valuable IP is a key factor in our industry's continued success. Domestically, the U.S. should work to strengthen the protection of trade secrets and implement balanced reforms to minimize abusive patent litigation practices. Globally, the U.S. should insist on strong protections for IP in trade deals.

In today's world, innovation can occur anywhere, from New York to New Delhi, and competition for technology leadership is fierce. Other nations are implementing aggressive policy incentives to bring the semiconductor industry to their shores. To maintain our global technology leadership, America must rise to this challenge by enacting policies that invest in growth opportunities and remove barriers to innovation.