**Statement of Aneesh Chopra**
**Chief Technology Officer and Associate Director, Office of Science and Technology Policy**
**Executive Office of the President of the United States**
**to the**
**Committee on Science and Technology**
**Subcommittee on Technology and Innovation**
**United States House of Representatives**
**on**
**Supporting Innovation in the 21st Century Economy**
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Chairman Wu, Ranking Member Smith, and Members of the Subcommittee, it is my distinct privilege to be here with you today to discuss the Obama Administration's Strategy for American Innovation.

President Obama understands the importance of innovation for sustainable growth and quality jobs. On September 21st, 2009, he released his *Strategy for American Innovation* that identified three critical roles for the Federal Government: to invest in the building blocks of innovation; to create the right environment for private sector investment and competitive markets by, for example, promoting high-growth entrepreneurship, protecting U.S. intellectual property rights, and fostering an open government; and to serve as a catalyst for breakthroughs related to national priorities such as clean energy, health care, and other "grand challenges" of the 21st century.

In my capacity as Assistant to the President, Chief Technology Officer, and Associate Director for Technology in the Office of Science and Technology Policy, my mission is to harness the power and potential of technology, data, and innovation to transform the Nation's economy and to improve the lives of everyday Americans. The Administration envisions an economy in which jobs are more plentiful, American firms are more competitive, Americans are safer and more secure, and energy use is cleaner and more economical.

**Problems with the Bubble-Driven Growth of the Past**

Despite the American economy's historic strength, our economic growth has rested for too long on an unstable foundation. Time and again, explosive growth in one sector of our economy provided a short-term boost while masking long-term weaknesses. In the 1990s, the technology sector climbed to unprecedented heights of valuation. The tech-heavy NASDAQ composite index rose over 650 percent between 1995 and 2000, but then lost two-thirds of its value in a single year.

After the tech bubble burst, a new one emerged in the housing and financial sectors. This type of growth isn't just problematic when the bubble bursts, it is not entirely healthy even while it lasts. Between 2000 and 2007 the typical working-age American household saw its annual income decline by nearly $2,000.

A short-term approach to the economy masks under-investments in essential drivers of sustainable, broadly-shared growth. It promotes temporary fixes over lasting solutions. This is patently clear when looking at how American education, infrastructure, healthcare, energy, and

research – all pillars of lasting prosperity – were ignored during the last bubble.

Despite this underinvestment in key drivers of growth, the American economy remains the most dynamic, innovative, and resilient in the world. America's strengths are clear: world-class research universities, flexible labor markets, deep capital markets, and an energetic entrepreneurial culture. The United States must redouble its efforts to give our world-leading innovators every chance to succeed. America cannot rest on our laurels while other countries are catching up.

**The Need for Innovation**

Innovation is at the core of a new foundation for durable, sustainable expansion in both employment and economic growth. Robert Solow won the Nobel Prize in economics by showing that factors other than capital intensity, most notably advances in human knowledge and technology, accounted for almost 90 percent of the growth in America's output per hour in the first half of the last century. Growth accounting has been refined since Solow's first attempts, yet contemporary research still shows that human skill and innovation remain far and away the most powerful force for improving prosperity over the long-run, which is exactly what we need.

Given its importance, the process of innovation cannot be taken for granted. It begins with the development of a new product, service or process. But it does not end there. To create value, a new idea must be implemented. Thus successful innovations will diffuse throughout an economy and across the world, impacting various sectors and sometimes even creating new ones. A diffused innovation must then scale appropriately, reaching an efficient size at which it can have a maximal effect.

The full process -- from development to diffusion to scaling -- has many variables and many inputs. Ideas often fail before they make it through the full chain. But those that do succeed can create value and jobs while improving people's lives.

It is essential for the long-run prosperity of our society that innovations flourish and progress along this chain. And here, government has a fundamental role to play.

**The Appropriate Role for Government**

While it is clear that a new foundation for innovation and growth is needed, the appropriate framework for government involvement is still debated. Some claim that the laissez-faire policies of the last decade capture the right strategy, and that the recent crisis was the result of too much rather than too little government support. Another view is that the government must dominate certain sectors, protecting and insulating those areas thought to be drivers of future growth. The Obama Administration rejects both sides of this unproductive and anachronistic debate.

The United States proposes to strike a balance by investing in the building blocks that only the government can provide, setting an open and competitive environment for businesses and individuals to experiment and grow, and by providing extra catalysts to jumpstart innovation in sectors of national importance.

**A Strategy for American Innovation**

President Obama has already taken historic steps to lay the foundation for the innovation economy of the future. In the Recovery Act alone the President committed over $100 billion to support groundbreaking innovation with investments in energy, basic research, education and training, advanced vehicle technology, health IT and health research, high speed rail, smart grid, and information technology.

The Obama Innovation Strategy has three parts: investing in the building blocks of innovation, promoting competitive markets that spur productive entrepreneurship, and catalyzing breakthroughs for national priorities.

*Investing in the building blocks of American innovation*

President Obama is committed to making investments that will foster long-term economic growth and productivity. These investments are in areas that include research and development, a skilled workforce, a leading physical infrastructure, and widely available broadband networks.

Recognizing the need for long-term and sustained investments in R&D, President Obama has pledged to complete the doubling of funding for three key science agencies, the National Science Foundation, the laboratories of the National Institute of Standards and Technology, and the Department of Energy's Office of Science. In his landmark address before the National Academy of Sciences, President Obama set a goal of lifting the sum of public and private investment in R&D to 3 percent of GDP, which would exceed the level achieved at the height of the space race. As the President noted, "science is more essential for our prosperity, our security, our health, our environment and our quality of life than it has ever been before." To encourage private sector investment in R&D, the President has proposed making the Research and Experimentation Tax Credit permanent. The Obama Administration is working to increase the impact of this investment by providing greater support for university commercialization efforts, for high-risk, high-return research, for multidisciplinary research, and for scientists and engineers at the beginning of their careers. For example, the National Science Foundation's FY11 budget proposes to double support for the Partnerships for Innovation program, which will help universities move ideas from the lab to the marketplace.

The Obama Administration is committed to expanding access to broadband.
Last week, the Federal Communications Commission (FCC) released the National Broadband Plan, called for in the American Recovery and Reinvestment Act, to identify ways to expand access to broadband and promote economic growth and job creation.

In his statement on the plan's release, the President committed to "build upon our efforts over the past year to make America's nationwide broadband infrastructure the world's most powerful platform for economic growth and prosperity." To that end, I've established a Broadband Subcommittee of the National Science and Technology Council's Committee on Technology, to focus closely on the plan that the FCC—an independent agency— produced, and to advise the Administration on the actions it should take to promote broadband as a platform to improve the lives of everyday Americans and drive innovation in the economy.

*Promoting competitive markets that spur productive entrepreneurship*

The Obama Administration believes that it is imperative to create a national environment that is ripe for entrepreneurship and risk taking, and allows U.S. firms to compete and win in the global marketplace. The Administration is pursuing policies that will promote U.S. exports, support open capital markets, encourage high-growth entrepreneurship, invest in regional innovation clusters, and improve our patent system. The Administration also strongly supports public sector and social innovation.

Competitive, high-performing regional economies are the building blocks for national growth, and the Administration is stepping up its efforts to cultivate regional economic clusters across the country. For example, the Administration has just announced a $130 million competition for an Energy Regional Innovation Cluster. This pilot project is designed to spur regional economic growth while developing energy efficient building technologies, designs, and systems. This will allow a region to develop a strategy that includes support for R&D, infrastructure, small and medium-sized enterprises, and workforce development.

Innovation must occur within all levels of society, including the government and civil society. The Obama Administration is committed to increasing the ability of government to promote and harness innovation. The Administration is encouraging departments and agencies to experiment with new technologies that have the potential to increase efficiency and reduce expenditures, such as cloud computing. The Federal Government should take advantage of the expertise and insight of people both inside and outside the Federal government; use high-risk, high-reward policy tools such as prizes and challenges to solve tough problems; support the broad adoption of community solutions that work; and form high-impact collaborations with researchers, the private sector, and civil society.

The Administration launched the White House Open Government Initiative to coordinate Open Government policy, support specific projects, and design technology platforms that foster transparency, participation and collaboration across the Executive Branch. The principles of open government help to advance a set of key national priorities with emphasis on demonstrating tangible benefits for the American people.

As an example, I am pleased to announce that the Defense Advanced Research Projects Agency (DARPA) will begin providing data on awardees in the Small Business Innovation Research (SBIR) program that utilize a streamlined process for contracting, and will extend this streamlined process to future SBIR solicitations. The SBIR program is one of the major Federal government programs used to support innovative technologies in America – yet the paperwork is cumbersome, lengthy and time consuming. These new steps represent a significant improvement – think of this as the 1040 EZ for federal government innovation grants. Initially, DARPA will display data on the number of awardees that are eligible for this streamlined process, how many awardees opted to utilize this process, and the average number of days it took to complete the streamlined agreement. In addition, the next round of DARPA's SBIR solicitations, scheduled for April 21st, will for the first time announce the wide availability of this streamlined option.

Typically contracting would take from 5 to 6 months to complete, but we believe that the streamlined approach will take on average less than 60 days. This represents a 60 to 70% reduction in the time and cost, saving small businesses tens of thousands of dollars and letting them get to work months faster.

By taking these steps, the Federal government is matching young, innovative companies responsible for creating new technologies, new jobs and America's future economic growth with federal funding that meets their needs.

*Catalyzing breakthroughs for national priorities*

President Obama is committed to harnessing science, technology and innovation to unleash a clean energy revolution, improve America's health care system, and address the "grand challenges" of the 21st century.

**Smart Grid Technologies**

Modernization of the Nation's electric grid is a vital component of efforts to build a low-carbon economy. The "smart grid" will help provide consumers with the information, automation, and tools they need to control and optimize energy use. The tools and services enabled by the smart grid will improve the reliability, security, and efficiency of the electric grid. Smart grid technologies can facilitate energy generation from clean energy supplies and enable more effective integration with the electricity delivery system of renewable energy sources, demand response resources, and plug-in electric vehicles. The National Institute of Standards and Technology (NIST) has coordinated an unprecedented, open and transparent public/private collaboration involving over 550 companies, organizations and government agencies to create the interoperability standards needed to foster innovation in the electric grid.

One month ago, in conjunction with NIST, we broadened participation by launching the Smart Grid Forum, an on-line forum focused on the Nation's energy consumers with an emphasis on spurring innovation in smart grid products and services. We received comments from over 130 individuals and organizations contributing their solutions to some of the most challenging smart grid goals that we have – from deployment of smart grid solutions, to development of standards needed for information exchange, to ensuring cybersecurity in the smart grid.

**Healthcare IT**

Another important Presidential priority is improving our health care system. Broad use of health information technology has the potential to improve health care quality, prevent medical errors, increase the efficiency of care provision and reduce unnecessary health care costs, reduce paperwork, increase administrative efficiencies, expand access to affordable care, and improve population health. The Recovery Act provides support for the deployment of health information technology, such as electronic health records. The Office of the National Coordinator for Health IT and the Centers for Medicare & Medicaid Services are working to ensure that health information technology products and systems are secure, can maintain data confidentially, can work with other systems to share information, and can perform a set of well-defined functions. NIST, in coordination with the Office of the National Coordinator and others, is accelerating the adoption of health IT standards by providing the critical testing infrastructure needed to achieve these goals.

One month ago, the Office of the National Coordinator for Health IT announced a new collaborative, *NHIN Direct*, which will organize a set of standards, services and policies that enable secure health information exchange over the Internet (www.nhindirect.org). Several Federal agencies and healthcare organizations are already using the Nationwide Health Information Network (NHIN) technology to exchange information amongst themselves and their partners. This new effort will provide an easy "on-ramp" for a wide set of providers and organizations looking to adopt the exchange of health information – and provide a framework to spur innovation in support of direct communication amongst providers, and between providers and patients – in a secure and simple manner.

**Grand Challenges**

Finally, the Obama Administration believes that grand challenges should be an important organizing principle for science, technology and innovation policy. They can address key national priorities, catalyze innovations that foster economic growth and quality jobs, spur the formation of multidisciplinary teams of researcher and multi-sector collaborators, bring new expertise to bear on important problems, strengthen the "social contract" between science and society, and inspire students to pursue careers in science, technology, engineering, and mathematics. The President's innovation strategy sets forth a number of grand challenges, such as solar cells as cheap as paint, educational software that is as compelling as the best video game and effective as a personal tutor, and early detection of diseases from a saliva sample. The National Economic Council and the Office of Science and Technology Policy are encouraging multi-sector collaborations to achieve these grand challenges that might involve companies, research universities, foundations, social enterprises, non-profits, and other stakeholders.

**The Way Forward**

Thanks to President Obama's leadership, the Administration has taken large strides in developing and implementing an ambitious innovation agenda. The Recovery Act alone provides over $100 billion to support research and development and the deployment of advanced technologies such as clean energy, health IT, the smart grid, and high-speed rail. This commitment to investing in America's future continues in the President's most recent budget, with sustained support for research, entrepreneurial small businesses, education reform, college completion, and a 21st century infrastructure.

The Administration is working with a wide range of stakeholders to identify the most promising ideas for implementing and further refining the Administration's innovation strategy. There are active inter-agency working groups on issues such as prizes and challenges, regional innovation clusters, research commercialization, spectrum reform, broadband, open government, and standards. The National Science and Technology Council is leading multi-agency research initiatives in dozens of critical areas such as aeronautics, genomics, green buildings, nanotechnology, quantum information science, robotics, and information technology. Through the President's Council of Advisors on Science and Technology, the Administration is able to receive high quality advice from the Nation's leading scientists, engineers and innovators on issues such as health information technology, advanced manufacturing, clean energy, and STEM education.

America has always been a Nation built on hope – hope that we can build a prosperous, healthy world for ourselves and for our children. These long-standing American aspirations depend critically on our far-sighted investments in science, technology and innovation that are the ultimate act of hope and will create the most important legacies we can leave.

The United States is still the land of the future. We have held that honor since this continent was discovered by a daring act of exploration more than 500 years ago. We have earned it anew with each passing generation because America's scientists, entrepreneurs and public officials have understood the importance of applying the power of American curiosity and ingenuity to the biggest economic and societal challenges.

I welcome any questions that the Committee may have.