



The Office of Science and Technology Policy

**Open Government Plan**

April 7, 2010

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## **Message from OSTP Director John P. Holdren**

President Obama has repeatedly articulated the indispensable role that science, technology, and innovation (ST&I) must play if the great challenges of our time are to be met. The President has made ST&I a core priority through the appointments he has made, the policy initiatives he has launched, and the budgets he has proposed—bringing Federal funding for ST&I to its highest level in history and committing to doubling the budgets of the National Science Foundation, the Department of Energy’s Office of Science, and the National Institute of Standards and Technology’s laboratories.

The President also recognizes that innovation blossoms best in an open environment, where ideas are shared freely and ingenuity from a wide array of contributors is encouraged. So it is no coincidence that OSTP is not only a central element of the Federal government’s innovation agenda but also home to the White House Open Government Initiative. OSTP in fact has three main missions, all of which are strengthened by open government.

First, OSTP provides the President with advice about technology and innovation that can strengthen our economy, generate jobs, and lead to breakthroughs that can improve the lives of all Americans. But innovation is not just about technology. The Nation can benefit greatly from innovations in the way our government institutions work, too. Indeed, achieving America’s potential for advancement through technological innovation requires innovation in government, and that is what the Open Government Initiative is all about.

Second, OSTP ensures that Executive Branch policies are informed by sound science. Open government helps OSTP fulfill this mission by enhancing data availability and information-sharing across academic disciplines, governmental bodies, the public and private sectors, and nations around the world. Armed with the vastly expanded body of knowledge that such a network enables, OSTP and the Administration are better able to hew to reliable evidence in their decision-making processes.

Third, OSTP is responsible for coordination and cooperation on ST&I issues across Executive Branch departments, agencies, and offices. Of course, the prerequisites for coordination and cooperation are communication and mutual access to relevant data, and the Open Government Initiative is designed to promote these prerequisites within the government as well as between the government and citizens.

In his inauguration address, the President promised to restore science to its rightful place in American policymaking. The *OSTP Open Government Plan* that follows is a critical element of getting that done. As a distinct office within the Executive Office of the President, OSTP is bound by the Open Government Directive to write an Open Government Plan. But this is no mere box-checking exercise for us. As I've indicated above, openness is core to the mission and culture of OSTP.

That is why I have instructed my colleagues to post this plan for your comments and feedback. It is not a final product but the first draft of a living document we are committed to revising and updating with your input. Please share your ideas and help OSTP do its part in moving toward a more open government and a more innovative, productive, and participatory society.

John P. Holdren  
Director, Office of Science and Technology Policy

## **Open Government Plan Highlights**

Open government is not an end unto itself. It is a means of bringing innovation to the way that government works—through transparency, participation, and collaboration. When government is more open, it can better be held to account and can deliver services more effectively and efficiently. Open government also makes it possible to work together to devise better solutions—informed by the best science and expertise—to the challenges we confront as a nation. By harnessing the values of openness to the convening power of technology, we strengthen our democracy by working together towards government of, for, by, and now *with* the people. The interconnectedness of our planet—which includes challenges from global pandemics to the threat of terrorism—calls for policymaking in new and innovative ways.

The work of the White House Open Government Initiative, established to create a more open government across the Executive Branch, and coordinated by OSTP in collaboration with other components of the Executive Office of the President, is detailed in the *Progress Report on Open Government to the American People* (December 8, 2009). OSTP now turns its attention to its own open-government practices. This document outlines OSTP’s Open Government Plan and implementation strategy.

The highlights of the Plan are:

### **Transparency**

- **OSTP IN THE OPEN:** We are opening up OSTP by starting to post profiles of many of our employees in their own words online in text and video so that you can know who we are and what we do.
- **R&D DASHBOARD:** Building on the work of USASpending.gov and IT.USASpending.gov, we are developing an R&D dashboard that will make it possible for anyone to track the government’s investment in basic research across the Executive Branch.

### **Participation**

- **OSTP BULLET-POINT BOOT CAMP:** We are publishing a template to help you make policy proposals to us in the same format that staff uses to brief senior officials.

- **PARTICIPATORY PCAST:** This highlights the work we are doing to use new media to enable public participation in the Presidential Council of Advisors on Science and Technology (PCAST).
- **GEEKS FOR WONKS:** A public-private partnership with the American Association for the Advancement of Science (AAAS) to connect ST&I students with government officials to promote civic engagement by designing and building prototypes of civic software.

### **Collaboration**

- **OSTP BULLPEN:** We showcase the new physical space we created to foster greater collaboration within the agency by tearing down the walls that divide us.
- **NSTC COLLABORATION PLATFORM:** This highlights the tools we are building to connect people across the agency.
- **S&T EXPERT NETWORK:** A public-private collaboration we are exploring to develop better ways of bringing scientific and technical advice to government from more sources, faster.

*A half century ago, this nation made a commitment to lead the world in scientific and technological innovation; to invest in education, in research, in engineering; to set a goal of reaching space and engaging every citizen in that historic mission...I believe it is not in our character, the American character, to follow. It's our character to lead. And it is time for us to lead once again.*

President Barack Obama, April 27, 2009

## **Introduction: The Mission of OSTP**

The more open we are about who works here, what we do, and why we do it, the better we will be able to collaborate with the rest of the ST&I community—especially the community outside of Washington—to ensure that policy is made on the basis of the best available scientific information. And, by being more open, we can work towards these strategic goals more effectively.

Established on May 11, 1976 (pursuant to Public Law 94-282, the National Science and Technology Policy, Organization, and Priorities Act of 1976), OSTP is an office within the Executive Office of the President and has a threefold mission:

- Provide the President and his senior staff with accurate, relevant and timely scientific and technical advice on all matters of consequence;
- Ensure that the policies of the Executive Branch are informed by sound science;
- Ensure that the scientific and technical work of the Executive Branch is properly coordinated so as to provide the greatest benefit to society.



### **Astronomy Night on the White House Lawn**

To promote the goal of science education, OSTP organized Astronomy Night at the White House on October 7, 2009. The South Lawn was lined with telescopes and science exhibits featuring moon rocks, mars rocks, and meteorites. The President and First Lady invited 150 middle school students from throughout the greater Washington, D.C. area to stargaze with five space heroes (Buzz Aldrin, Charles Bolden, John Grunsfeld, Mae Jemison, and Sally Ride), and with two remarkable science students, Caroline Moore and Lucas Bolyard. Both were just 14 years old when Caroline became the youngest person ever to discover a supernova and Lucas discovered a rare type of pulsar.

To further this mission, OSTP works with the Office of Management and Budget (OMB) to review and make recommendations on research and development budgets for all Federal agencies; it manages the National Science and Technology Council (NSTC), which coordinates research and development efforts that cross Executive Branch department and agency lines; and it coordinates the implementation of a number of important international science and technology agreements. It also provides administrative and technical support for PCAST.

Organized into four divisions (science, technology, environment and energy, and national security and international affairs), OSTP comprises approximately 70 employees and has a FY 2010 budget of \$7,000,000. OSTP is led by a director, who also serves as the Assistant to the President for Science and Technology and co-chair of the PCAST. The director is nominated by the President and confirmed by the U.S. Senate. Each of OSTP's four divisions is headed by an Associate Director who is also nominated by the President and confirmed by the U.S. Senate. As of April 2010, the leadership of OSTP comprises the following individuals:

- Director of the Office of Science and Technology Policy and Assistant to the President for Science and Technology: John P. Holdren
- Associate Director for Energy and Environment: Shere Abbott
- Associate Director for Technology and U.S. Chief Technology Officer: Aneesh Chopra
- Associate Director for Science: Vacant [Nobel laureate Carl Wieman has been nominated by President Obama for the post]
- Associate Director for National Security and International Affairs: Vacant [Philip Coyle has been nominated by President Obama for the post]

Further information about OSTP can be found on the Web at [www.whitehouse.gov/ostp](http://www.whitehouse.gov/ostp).

Specific information includes:

- Information about OSTP: [www.whitehouse.gov/ostp/about](http://www.whitehouse.gov/ostp/about)
- Information on OSTP's Divisions: [www.whitehouse.gov/ostp/divisions](http://www.whitehouse.gov/ostp/divisions)
- Information on OSTP's Leadership and Staff:  
[www.whitehouse.gov/ostp/about/leadershipstaff](http://www.whitehouse.gov/ostp/about/leadershipstaff)

Figure 1 on the following page shows the members of the OSTP staff and their assignments.



**John P. Holdren**  
Director

**Director's Office**

Executive Assistant to the Director, *Karrie Pitzer*  
Chief of Staff, *Jim Kohlenberger*  
Deputy Chief of Staff, *Ted Wackler*  
Deputy Director for Policy, *Tom Kalil*  
Research Assistant, *Phil Larson*  
Assistant Director At-Large, *Steve Fetter*  
General Counsel, *Rachael Leonard*  
Assistant Director, Federal Research  
and Development, *Kei Koizumi*  
Assistant Director, Strategic Communications  
and Senior Policy Analyst, *Rick Weiss*  
Assistant Director, International Relations, *Joan Rolf*  
Assistant Director, Legislative Affairs, *Donna Pignatelli*  
Policy Analyst, *Hillary Chen*  
Security Officer, *Susan Brancato*

**Energy & Environment Division**

Associate Director, *Sherie Abbott*  
Confidential Assistant, *Lauren Andersen*  
Assistant Director, Climate Adaptation and  
Assessment, *Kathy Jacobs*  
Senior Policy Analyst, *Philip DeCola*  
Senior Policy Analyst, *Jerry Miller*  
Senior Policy Analyst, *Johannes Loschnigg*  
Senior Policy Analyst, *Kate Moran*  
Senior Policy Analyst, *Rita Curtis*  
Senior Policy Analyst, *Cyrus Wadia*  
White House Fellow, *Sarah Stewart Johnson*  
AAAS Fellow/Policy Assistant, *Sarah Carter*

**National Security & International Affairs Division**

Assistant Director, National Security  
and Emergency Preparedness, *Mark LeBlanc*  
Assistant Director, Chemical  
and Biological Countermeasures, *Peter Emanuel*  
Senior Policy Analyst, *Bill Belote*  
Senior Policy Analyst, *Tammy Taylor*  
Senior Policy Analyst, *Pat Falcone*  
Senior Policy Analyst, *Jason Rao*  
Senior Policy Analyst, *Jagadeesh Pamulapati*  
Policy Analyst, *Duane Blackburn*

**Budget and Administration**

Information Technology Specialist, *George Cravaritis*  
Budget Analyst, *Penny Guy*  
Records Management, *Miriam Eubanks*  
Administrative Officer, *Diana Zunker*  
Administrative Operations Officer, *Dawn Epperson*  
Administrative Specialist, *Mary Burgess-Gregg*  
Administrative Specialist, *Donna Coleman*  
Administrative Specialist, *Dawn Mielke*

**Technology Division**

Associate Director and Chief Technology Officer, *Aneesh Chopra*  
Confidential Assistant, *Tristen Pegram*  
Senior Adviser to the CTO, *Eugene Huang*  
Deputy Chief Technology Officer, Open Government,  
*Beth Simone Noveck*  
Deputy Chief Technology Officer, Internet Policy,  
*Andrew McLaughlin*  
Deputy Chief Technology Officer, Telecommunications,  
*Scott Deutchman*  
Assistant Deputy Chief Technology Officer, Open Government,  
*Robynn Sturm*  
Assistant Director, Energy R&D, *Kevin Hurst*  
Assistant Director, Information Technology R&D, *Chris Greer*  
Assistant Director, Advanced Manufacturing  
and ASME Fellow, *Sridhar Kota*  
Assistant Director, Space and Aeronautics, *Damon Wells*  
Senior Policy Analyst, *Rich Leshner*  
Senior Policy Analyst, *William Davis*  
Senior Policy Analyst, *Carl Williams*  
Assistant Director, Nanotechnology, *Travis Earles*  
Policy Analyst, *Kumar Garg*  
Policy Analyst, *Aman Bhandari*  
AAAS Fellow/Policy Analyst, *Heather Evans*

**Science Division**

Assistant Director, Social and Behavioral Sciences (Acting)  
and Assistant Director, Life Sciences, *Diane DiEulitis*  
Assistant Director, Biotechnology, *Mike Stebbins*  
Senior Policy Analyst, *Chavonda Jacobs-Young*  
Senior Policy Analyst, *Kimberly Briggman*  
Senior Policy Analyst, *Stephen Merkwowitz*  
Senior Policy Analyst, *Peter Schmeissner*  
Senior Policy Analyst, *Jessie DeAro*

**President's Council of Advisors on Science and  
Technology (PCAST)**

Executive Director, *Deborah Stine*  
Deputy Executive Director, *Mary Maxon*

**National Science and Technology Council  
(NSTC)**

Executive Director, *Christyl Johnson*

**National Nanotechnology Coordination Office  
(NNCO)**

Director, *Clayton Teague*

**National Coordination Office for Networking  
and Information Technology Research and  
Development**

Director, *George Strawn*

Figure 1 - OSTP Staff Directory

## Science, Technology, and Innovation in the Obama Administration

There are six immediate practical challenges to which ST&I are most germane, all of them with requirements and ramifications that are not only national but also global and all of them on President Obama's priority list:

- Promoting economic recovery, job creation, and development;
- Defeating the most dangerous diseases and achieving better health-care for all at affordable cost;
- Meeting national and global energy needs while curbing CO<sub>2</sub> emissions from fossil-fuel combustion;
- Managing the competing demands on land and fresh water for the production of food, fiber, biofuels, and ecosystem services, including carbon sequestration and habitat for biodiversity;
- Maintaining the productivity and ecological integrity of the oceans; and
- Reducing the dangers posed by the existence and spread of nuclear weapons.

Equally important is recognition by the President and his ST&I appointees that meeting these practical challenges depends on investing in six cross-cutting "pillars of progress" in ST&I:

- Science, technology, engineering, and mathematics (STEM) education and training, from pre-school to grad school to lifelong learning;
- The vitality and productivity of our research universities and national and private laboratories;
- The capacity and robustness of infrastructures for information and communication, transportation, and energy;
- Capabilities in space, which are germane not only to looking and exploring outward but also to Earth observation, geopositioning, communication, and more;
- An economic and political environment that promotes and rewards research, entrepreneurship, and innovation while also providing appropriate protections for the public's interests in health, safety, personal and national security, privacy, and other social goods; and

- Well-functioning partnerships (across governmental bodies, the public and private sectors, regions, and nations), in order to combine skills and insights, share costs and risks, and optimally distribute solutions and benefits.

## **Transparency**

Transparency is one of the core principles of democracy. It fosters accountability and trust in the institutions of government, and it catalyzes innovation and renewal.

OSTP has been a leader in promoting transparency in government through the development of policy and guidance for the Executive Branch concerning transparency; through identification and facilitation across the government of technologies that enable transparency; and through encouragement of and participation in the use of those technologies to actually implement transparency.

OSTP recognizes that this is only the beginning of such efforts. There is much more to do. And an important part of what we are doing now is “walking the walk”—increasing transparency with respect to information and data about OSTP’s own operations. More specifically, to open up the activities of OSTP in ways that will help our colleagues across the government as well as members of the public know what we do, why we do it, and how they can not only benefit from our work but contribute their ideas and partner with us, we are launching an effort called **“OSTP in the Open”**.

### **OSTP in the Open**

We are a relatively small office within the Executive Office of the President, making production of a staff directory with names and titles an easy matter. Having done that last year, we’re now taking the next step by creating a webpage with information about the backgrounds and activities of OSTP employees in their own words. (A few examples of our initial staff profiles are found in Appendix A. We will continue to update them going forward. For more, check out our website: [www.whitehouse.gov/ostp](http://www.whitehouse.gov/ostp).)

To further facilitate interaction with OSTP staff, we are inviting comments and submissions via Twitter. OSTP has a Twitter account (@whitehouseostp). Write to us about this plan using the hashtag #OPENOSTP. Feel free to draw our attention to your blog or share with us the writings

of others that you find particularly interesting, by passing relevant links to us through the Twitter-sphere.

The purpose of OSTP in the Open, of course, is not simply to inform a wide audience inside and outside government about OSTP about who is working here and what they're doing (thereby perhaps inspiring some more bright people to think about joining our OSTP team now or in the future); it's also to tell that wider audience what questions we're trying to answer so that more of you out there will share with us your ideas about the answers.

## OSTP Open Data

OSTP's "data" are found in many different formats. OSTP reports, articles, testimonies, press releases, and other documents since the start of the Obama Administration are being posted on our website's Resource Library ([www.whitehouse.gov/ostp/library](http://www.whitehouse.gov/ostp/library)) and Pressroom ([www.whitehouse.gov/ostp/pressroom](http://www.whitehouse.gov/ostp/pressroom)).

Per the Open Government Directive, we have also published on Data.gov new high-value data sets pertaining to Federal spending on R&D that resulted from our inter-agency collaborations. We will continue to publish this budget-related information online in open, machine-readable, downloadable formats. The first three such data sets we published were:

### **1. A decade's worth of data on investments in innovation coordinated through the National Nanotechnology Initiative (NNI).**

*What Are These Data All About?* The National Nanotechnology Initiative (NNI) coordinates Federal nanotechnology research and development among 25 Federal agencies. The data released show NNI investments by agency and program component area (PCA) from the Initiative's founding in FY 2001 through FY 2010. These data have been available as part of the NNI's annual supplements to the President's Budget. But compared to earlier releases, the data we've released now are more accessible and readily available for analysis by users wishing to assess trends and examine investment allocations over the ten-year history of the NNI. The cumulative NNI investment of

nearly \$12 billion is advancing our understanding of the unique phenomena and processes that occur at the nanoscale and is helping to leverage that knowledge to speed innovation in high-impact opportunity areas such as energy, security, and medicine.

*What Might People Do With These Data?* The data lend themselves to analyzing investments over time as well as comparison with nano R&D spending in other countries. Users combining the data with other information may be able to develop insights about the impact of the investments and thereby help us develop more informed funding strategies going forward.

## **2. Aggregated Federal R&D investments in networking and information technology coordinated through the National Coordination Office for NITRD—Networking and Information Technology Research and Development.**

*What Are These Data All About?* Thirteen Federal agencies, including all of the large science and technology agencies as well as a number of others, are formal members of the NITRD program. The National Coordination Office for the program is the primary mechanism by which the Government coordinates its unclassified networking and information technology (R&D investments. The data released allow individuals to track funding trends and identify agencies with investments in technical areas of interest, and they can help entrepreneurs and grant seekers better direct their efforts to engage the correct Federal agency. Currently, two years (FY2009 and FY2010) of budget numbers are being posted, but additional information going back 15 years will be posted by April 15, 2010.

*What Might People Do With These Data?* In addition to highlighting funding by agency and helping to visualize funding priorities over time, these data will allow for comparative analysis and visualization of the funding's impact.

## **3. Interagency investments in climate research and observations coordinated through the U.S. Global Change Research Program (USGCRP).**

*What Are These Data All About?* The USGCRP coordinates and integrates Federal research among thirteen participating agencies on changes in the global environment and their implications for society. The data released quantify the budget authorities for

individual agency activities in which the primary focus is on observations, research, and analysis of climate change and its underlying causes, as well as such activities as management and distribution of climate data records, modeling and predicting of climate change, analysis of impacts of climate change, and preparation of information in support of climate-change adaptation and mitigation policymaking. Since 1990, these data have been available in printed annual reports (“Our Changing Planet”)—and in other formats since—but they have never before been compiled in one, accessible, machine-readable format.

*What Might People Do With These Data?* Having these data in machine-readable form will allow for an array of new trend analyses and provide transparency about government investments in these important areas of research, such as Earth observation.

### **Transparency: Compliance Initiatives**

OSTP aims to serve as a model office for complying with policies, directives, and other guidance that reflect the Federal government’s commitment to open government and transparency. This goal is reflected in the following ongoing activities that are ongoing at OSTP:

- Transparency Platforms: Because OSTP is a small office within the Executive Office of the President, our contracting is managed under the umbrella of the Office of Administration (OA), which files spending reports via USASpending.gov and IT.USASpending.gov (which tracks the subset of technology spending). Also, because our function is to provide advice and not to award grants or contracts or provide services, we do not spend Recovery Act funds and therefore do not participate in Recovery.gov (although the staff of OSTP is required to be compliant with the lobbying restrictions related to the Recovery Act). While we do not promulgate rules, we often publish requests for comment in the Federal Register in connection with our work, as well as inviting response via Regulations.gov and on our blog. As the home of the Open Government Initiative, we have partnered with OMB in the creation of all of these transparency platforms supporting government-wide transparency.

- Freedom of Information Act (FOIA): OSTP has no FOIA backlog. OSTP aims to respond promptly (within 20 working days) to all FOIA requests submitted by the public. OSTP receives requests for a wide spectrum of documents. Most popular is the “self-search”, which is a search of OSTP’s records for the requester’s name. These almost never result in any “hits” since OSTP does not maintain personal files or records. To assist the public, OSTP provides specific instructions on how to make FOIA requests and also provides information that defines commonly used terms often used when FOIA requests are processed.

To facilitate the processing of FOIA requests, every FOIA request received by OSTP is logged when received and reviewed for: (1) a request for expedited treatment and (2) substance. Relevant employees who may have records are contacted within one to two business days of receipt of a FOIA request and are notified when they must provide the records. These records are then sorted, copied, and reviewed for relevant exceptions and exclusions before being provided to the requestor. In 2009, OSTP eliminated its backlog of FOIA requests from prior years (2005-2008) and at present is adequately resourced to analyze, coordinate, and respond to FOIA requests in a timely manner. Further information regarding OSTP’s FOIA efforts can be found at [www.whitehouse.gov/ostp/library/compliance/foia](http://www.whitehouse.gov/ostp/library/compliance/foia).

- Congressional Requests for Information: Senate-confirmed OSTP officials regularly receive invitations from the U.S. Congress for its officials to testify. OSTP also regularly receives requests from the U.S. Congress for information regarding OSTP and its activities. To facilitate the handling of these Congressional requests, OSTP’s primary point of contact is its Assistant Director for Legislative Affairs.

OSTP regularly posts on its website the prepared testimony of its officials who testify before Congress. Testimony can be found online at: [www.whitehouse.gov/ostp/library/test](http://www.whitehouse.gov/ostp/library/test).



- Declassification Programs: OSTP has a process-oriented information security program. There is one original classification authority within OSTP—the OSTP Director. There were no new original classification decisions in FY 2009. There were derivative classification decisions, which continue classification decisions made by other agencies.

Additionally, through the Federal government’s ongoing systematic declassification program, an authorized, certified historical-records reviewer reviews thousands of pages of classified documents annually to ensure timely review of classified information.

When appropriate, numerous decisions are made to release those documents that can be declassified and made public. Since 2005, OSTP has reviewed and coordinated more than 1.5 million pages of classified documents for potential declassification.

### **Transparency Flagship: The R&D Dashboard**

The E-Government Act of 2002 requires the tracking of data and the maintenance of a repository of information on how the government invests in R&D. This year, building upon the successful experience tracking government contracts under [USASpending.gov](http://USASpending.gov) and [IT.USASpending.gov](http://IT.USASpending.gov), and in a manner harmonized with the Administration’s efforts to improve the transparency and usability of Federal spending data, OSTP plans to design an “R&D Dashboard” that will enable us to track, visualize, and analyze R&D spending data. This is not a simple process. Unlike [IT.USASpending.gov](http://IT.USASpending.gov), which can draw upon the Form 300 that Federal CIOs regularly file with OMB in connection with outlays of money for technology, there is no single form, index, classification system, or harmonized reporting mechanism that tracks these data, and no consensus on what data to track. Developing an accurate and comprehensive tracking system will be challenging, but we are committed to making the right data available to the public so that we can understand better the impact of our R&D investments.

With active participation by stakeholders, we will explore fundamental changes in how data on R&D should be made available to the public. As in other areas included in the push for greater transparency, the emphasis will be on testing models for making R&D-related data from contributing agencies available in ways that are secure, interoperable, and usable by a wide array

of potential users. Efforts in this area will be coordinated with plans in closely related areas such as USASpending.gov and Data.gov.

We will begin our efforts for the R&D Dashboard with two coordinating bodies supported by OSTP, the National Nanotechnology Initiative and National Coordination Office (NCO) for Networking and Information Technology Research and Development (NITRD).

## **Participation**

### **Open Policymaking**

OSTP has been at the forefront of participatory policymaking in the Executive Branch. In his January 21, 2009 Memorandum on Transparency and Open Government, President Obama directed the Chief Technology Officer (CTO) to issue recommendations for creating a more transparent, participatory, and collaborative government. To that end, OSTP, together with its partners in the White House Open Government Initiative, solicited expertise from across the United States by running a three-phase public consultation (brainstorm, discussion, drafting) process from May 21 through July 6, 2009. This complemented an earlier online brainstorming with government employees, numerous face-to-face events around the country, and dozens of submissions received via electronic mail and posted to the White House Open Government Initiative ([www.whitehouse.gov/open](http://www.whitehouse.gov/open)) website. This “open policymaking” experiment has since been improved upon and institutionalized in practice across the Executive Branch.

Here’s how that first effort worked. In phase one, which commenced in May 2009, the public brainstormed more than 900 ideas for open-government policy. These ideas were categorized by theme to make them easier to sort, read, and map. Sixteen themes emerged from these proposals, each of which raised deeper questions and challenges to be tackled in an in-depth, online public discussion in June 2009 as part of phase two. In all, participants shared nearly 1,000 insights in response to the 16 blog postings. In phase three of the open policymaking process, the public crafted proposed language via a Web-based collaborative editing tool (aka a Wiki). By posting more than 300 drafts and rating other’s proposals, the public helped us frame specific implementing language and, in the process, learned how hard it can be to translate lofty principles into clear and specific direction to agencies.

In the consultation process, the public emphasized the importance of publishing raw government data online in machine-readable formats. Participants further urged the Administration to hardwire the principles of open government by requiring agencies to develop an open government plan (such as this one) and set clear milestones. They underscored the need for an enabling policy framework. Finally, they wanted to be sure that—in doing things in new,

technologically-enabled ways—we continued to address traditional government reforms, such as making government more responsive to Freedom of Information Act requests and doing better record keeping.

Generally, government officials draft a policy and then solicit public engagement. We were able to use freely available, Web-based tools to turn that conventional process on its head and work with the public from the get-go. More significantly, these tools enabled the public to take charge and “self-moderate” the conversation, using simple mechanisms for flagging public submissions—such as those on UFOs and birth certificates as “off-topic”—to help keep the discussion on-topic and easy to follow.

This online public consultation was only part of the listening exercise—but an important part that enabled us to hear from people throughout the United States. As one public commenter noted, “This was a great first experiment! Keep ’em coming! Only through activity can we refine practice.” The output—including the suggestion that every agency write and post online its own open government plan—directly translated into ideas for the Open Government Directive.

Subsequently, we ran Open Policy Forums on declassification policy, Web cookies policy, health IT policy, the smart grid, scientific integrity, and, most recently, public-access publishing.

In that last forum, launched December 10, 2009, the public was to participate in thinking through what the Federal government’s policy should be with regard to public access to published federally-funded research results. To that end, OSTP conducted an interactive, online discussion, focusing on three main areas of interest:

- **Implementation:** Which Federal Agencies are good candidates to adopt public access policies?
- **Features and Technology:** In what format should articles and data be submitted in order to make them easy to search and retrieve, and to make them easy for others to link to it?
- **Management:** What are the best mechanisms to ensure compliance? What would be the best metrics of success?

Public comment was so successful that the discussion was extended by several weeks. OSTP scientists and advisors are currently studying public comments and plan to submit recommendations to senior officials soon.

### **Other Public Outreach and Communications Efforts**

OSTP staff members regularly participate in conferences, workshops, and meetings; give interviews to broadcast, print, and online media; meet with school groups; and write articles and op-eds. Our public communications are coordinated through the Office of Strategic Communications, headed by Rick Weiss. As a former science writer for the Washington Post, Rick is a tremendous advocate for the First Amendment and encourages all OSTP staff to talk openly (while safeguarding personal privacy, national security, and using good judgment) with the press about their work. He also has supervisory responsibility for the OSTP Blog. This was the first blog within the Executive Office of the President to take public comment. Since our new website launched on February 3, 2010, we have posted 25 blog entries. (We are in the process of converting our blog over to the White House Drupal content management system and reposting older material.)

Twitter provides a unique channel for interacting with the American public. Since August 2009, readership has dramatically increased, and we now have approximately 30,000 followers for WHITEHOUSEOSTP and approximately 37,000 followers for OPENGOV. OSTP tweets a science and technology fun fact or interesting news item almost daily. We also direct people to blog postings, video feeds, and other Web destinations that fit within OSTP's portfolio and that our followers may find interesting. OSTP has also used Twitter as a direct line of live communication during events, such as during Astronomy Night on the White House Lawn (where a TwitPic was also tweeted), the launch of the STEM initiative "Educate to Innovate," and the White House ceremony where the President honored National Medal of Science and Technology awardees.

## Public Participation in Drafting this Plan

From February 5 until March 19, 2010, OSTP and more than 20 other partnering Federal agencies launched an online public consultation for the development of Open Government Plans using an online brainstorming platform called Ideascale. Each brainstorming website discussed creating a more transparent, collaborative, and participatory government in that agency. People from all over the country suggested ideas, commented on others already posted, and voted on their favorites. OSTP, like many of the agencies, did not receive particularly robust participation. We had 23 commenters, who posted 29 ideas, 144 votes, and 26 comments.

We believe participation rates were low because we did not effectively advertise this opportunity to participate. To the extent that we did, we didn't reach new audiences, but reached traditional interest groups and stakeholders, who may in some cases be disinclined to participate by such open means, which enable everyone to comment and vote on everyone else's suggestions. Perhaps people believe incorrectly that we do not take seriously input received via these new tools. This suspicion may be heightened when, as in this case, OSTP staff did not participate by responding to postings on a daily basis. By contrast, in the public access policy forum, OSTP staff regularly engaged with the public, and participation rates were much higher.

While the input received via Ideascale was helpful, it was not always in a form that would easily translate for implementation. For example, someone suggested that we convene a Space Solar Power Conference. Whatever the merits of the suggestion, the format is too short to allow for any detail or specifics. The brainstorming format—although an excellent way to get new ideas quickly—is not well suited to longer postings. This is why we are working on two flagship initiatives to foster more in-depth forms of citizen participation.

## Participation Flagship: Participatory PCAST

The President's Council of Advisors on Science and Technology (PCAST) is a group of the nation's leading scientists and engineers (see Appendix B) who directly advise the President and the Executive Office of the President ([www.whitehouse.gov/ostp/pcast/](http://www.whitehouse.gov/ostp/pcast/)).

Administered and supported by OSTP, PCAST offers advice and makes recommendations in the many policy areas in which understanding of science, technology, and innovation is germane to good decisions. PCAST takes on issues of both domestic and global importance, from the Administration's efforts to improve science, technology, engineering, and math (STEM) education to increasing the role of science and technology in foreign policy and development assistance.

We have been webcasting PCAST's meetings, which occur every other month. This evidently is serving a need, because there have been more than 65,000 page views (as of Jan 20, 2010) of the live or archived streams. We are using interactive tools, including Facebook, to enable people to post questions to be answered at both the full-committee PCAST meetings and those of subcommittees such as the one focused on health IT. We are posting questions from the public together with background papers in conjunction with our Advanced Manufacturing work. We have solicited public input so we can learn about model STEM-education programs in order to prepare a report on that topic. We have experimented, and will continue to experiment, with the use of innovative technologies to make PCAST as participatory as possible—and hence as broadly informed as possible with regard to the science and technology topics on which it must advise the President.

### Participation Flagship: Geeks for Wonks

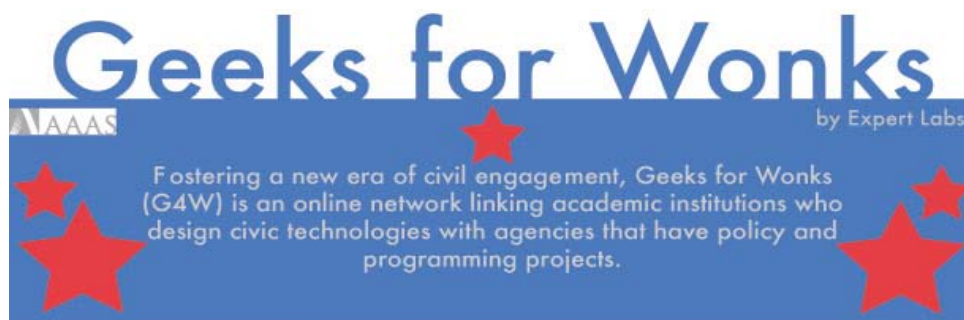


Figure 2 - Geeks for Wonks Advertisement

OSTP wants to educate the next generation about the importance of civic virtue by tapping into the ability of today's young people to design civic software. In other words, we want to connect students studying technology with government agencies that have new projects in need of

technical help. For this purpose, OSTP is working with the academic community to launch “Geeks for Wonks”—a listserv linking academic institutions that work on designing civic technologies with agencies that have policy and programming project needs.

This will not substitute for procuring professional-grade software and services. To the contrary, working with students will allow agencies to begin version 1.0 of important projects they might otherwise never undertake. For example, the University of Maryland worked with the Department of Health and Human Services to prototype version 1.0 of a Community Health Map (see Figure 3), which enables users to compare quality-of-life data in their county compared to others. This effort gave a wide range of users—including health policy analysts, journalists, community leaders, and students—a chance to easily explore rich data sets. OSTP worked with students at New York Law School to produce a video to promote the use of interactive social media for civic engagement to government employees. In another example, a professor at Princeton University developed FedThread, a new tool for collaboratively annotating the Federal Register in response to the National Archives announcement interested in new ways of presenting the Register.

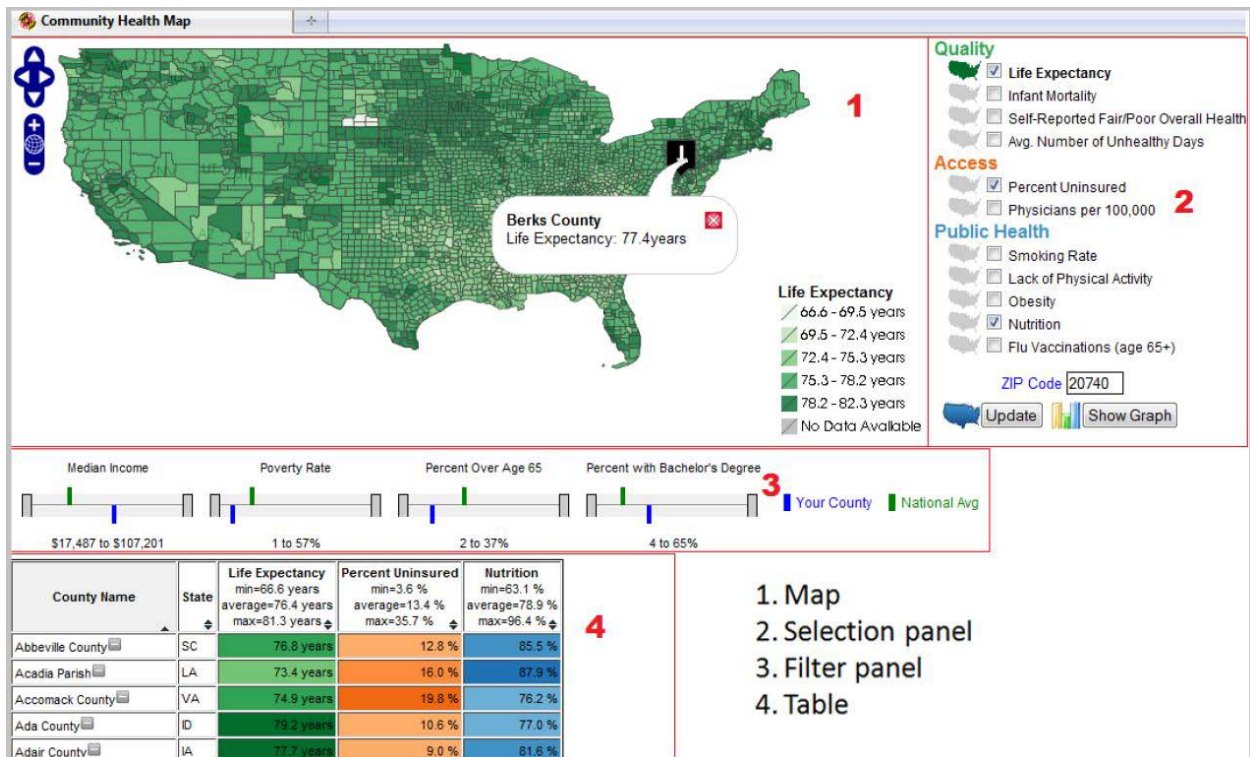


Figure 3 - University of Maryland Health Map Collaboration with HHS



## Participation Flagship: “Bullet Point Boot Camp”

OSTP, in coordination with other Federal agencies, grapples every day with complex ST&I questions of great importance—how to improve capacity to cope with new strains of pandemic disease, how to keep cyber networks secure, how to employ biotechnology and nanotechnology to more efficiently convert sunlight to fluid fuels and electricity, and, of course, how to make government itself more efficient and more innovative. Finding solutions to these problems depends upon having up-to-date knowledge and expertise in science and technology, and it requires being able to tap into the widest possible array of innovative ideas. This is why we want to hear from you. We need your innovative ideas.

### **Policy Innovation: Prizes Across Government**

OSTP played an instrumental role in drafting and shaping new OMB guidance encouraging agencies to promote and harness innovation using prizes and challenges. The guidance marked a major step in fulfilling the President’s call for agencies to use prizes and challenges as a policy tool. The OMB guidance “strongly encourages” agencies to utilize prizes, proactively address legal and other barriers, and designate an individual to participate in an OMB/OSTP-led government-wide practice committing individuals and agencies to advance this approach. Most importantly, it highlights potential legal pathways for deploying prizes. Working with other agencies to overcome potential challenges to prizes is important because well-designed prizes and challenges have a number of benefits. They stimulate private sector investment that is greater than any investment the government could make. Plus, they dramatically expand the pool of talent focused on addressing key national problems, while capturing the public’s imagination, and changing the public’s perception of what is possible.

We are also conscious of the fact that you are busy and want to share and provide expertise that will be relevant and actionable. Hence we are launching the “Bullet-Point Boot Camp” program to provide ongoing advice to the public about how best to provide advice back to us. In so doing, we hope to make citizen participation a more effective experience.

It is important to recognize that there are a myriad of actions one can take to move the levers of power and help “make policy.” As you formulate a proposal, consider whether you want to suggest something other than the traditional approaches of legislation and regulation:

- An executive order or memorandum—e.g., the Memorandum on Transparency and Open Government that the President issued on his first day in office that created the momentum, vision, and authority for greater openness.

- New hire or role—e.g., the creation of an Office of the CTO to focus greater attention on innovation, including innovation in government.
- Convening—e.g., bringing leaders together at the White House to focus on modernizing government or STEM education initiatives and encourage public sector efforts, such as the \$500 million various companies, philanthropies and other private groups have committed to STEM education in response to the President’s call.
- Stakeholder Outreach—e.g., people we should meet with whether online or face-to-face and suggestions for new forms of dialogue and deliberation.
- Events—e.g., venues that the President, First Lady, Vice President or other senior leaders should visit and the issues they should address.
- Budget Proposals—e.g., a suggestion for a project for which an agency should request funding from Congress.
- Public-Private Partnership—e.g., the National Archives collaborating with Princeton University to develop Fed Thread, the first ever annotatable Federal Register.
- Prizes and Competitions—e.g., HHS’ idea to hold a competition for creating the best H1N1 flu prevention video.
- Projects—e.g., release all the White House Visitor logs and post them on the WH.gov website.

While there is a wide range of policy innovations by which one can translate good ideas into actionable policy, the currency of the realm is the one-page memo (okay, two pages, max).

Because of the extraordinary breadth of our work and the urgency with which we sometimes need to make decisions, we need short introductions that layout pros and cons of any approach. To that end, here’s the basic outline of a memo we might write to help a decision maker decide on a particular course of action:

- Title
- Short description—What is the idea? A very short intro paragraph explaining the proposal and why it would serve national priorities.
- Importance and relevance of the proposal—Another way to think of this is, what would the newspaper headline be the next day if this were enacted?

- Discussion of the issue—identify who the necessary partners are and anticipated costs
- Options with pros and cons for each and your recommendation. Alternatively, if you are identifying a single option make sure to anticipate any criticisms and identify missing facts.
- Timeline for implementation

Such memos can be supplemented with backup materials, such as presentations or more detailed reports.

### Participation Flagship: The Grand Challenge RFI and Think Tank

In September, President Obama released his [Strategy for American Innovation](#), designed to foster sustainable growth and help create high-quality jobs. One of the goals of the President’s strategy is to harness science and technology to address the “grand challenges” of the 21st century in areas such as health, clean energy, national security, and education and life-long learning.

Examples of specific goals that have been previously articulated by the President and others include early detection of dozens of diseases from a saliva sample, solar cells as cheap as paint, and educational software that is as compelling as the best video game and effective as a personal tutor.

In February 2010, OSTP and the National Economic Council released a [“request for information”](#) that is designed to collect input from the public regarding:

- The grand challenges that were identified in the President’s innovation strategy;
- Other grand challenges that the Administration should consider, such as those identified by the [National Academy of Engineering](#);
- Partners (e.g. companies, investors, foundations, social enterprises, non-profit organizations, philanthropists, research universities, consortia, etc.) that are interested in collaborating with each other and the Administration to achieve one or more of these goals; and

- Models for creating an “architecture of participation” that allows many individuals and organizations to contribute to the process of finding solutions to these grand challenges.

Responses to this RFI are due April 15th. They can be submitted electronically to [challenge@ostp.gov](mailto:challenge@ostp.gov).

## **Collaboration**

### **Within OSTP**

Within OSTP, we hold two weekly meetings of each of the four divisions to facilitate face-to-face collaboration within the office and foster exchange of ideas. We also hold “tech talks” and occasional seminars in which scientists and engineers present their research, inventions, or innovations.

To further encourage inter-office collaboration, we have altered our physical plant. The Technology Division of OSTP now sits in “open” office space. Most of the staffers sit around the perimeter of a large room with a conference table in the middle. The table serves as a locus for spontaneous convening and conversation.



**Figure 4 - OSTP Bullpen**

## Across Agencies

The core of OSTP's work is collaboration. The office convenes inter-agency working groups on science, technology, and innovation.

One example is the National Science and Technology Council (NSTC). The NSTC, which is managed by OSTP and is responsible for coordinating science and technology policy across the federal government, has been reconstituted and revitalized over the past year for the tasks of aligning multiple-agency S&T efforts with the President's stated ST&I objectives and identifying new collaboration and streamlining opportunities where appropriate. The elevated priority given to ST&I by the Administration is evident in the level of participation on this council by senior agency leaders. Council meetings are chaired by OSTP Director Holdren and attended, as its charter dictates, by deputy secretaries, undersecretaries, and the administrators of NSF, NASA, NOAA, NIST, and so on. Its Committee on Technology, co-chaired by CTO and OSTP Associate Director Chopra and Chief Information Officer Vivek Kundra, is energetically advancing interagency cooperation on initiatives in broadband, the use of information technology to increase the efficiency of government, and much more. Its Committee on Environment and Natural Resources, chaired by OSTP Associate Director Shere Abbott, is reasserting its oversight responsibilities for the U.S. Global Change Research Program. Its Subcommittee on Education is linking efforts to advance the President's STEM-education initiatives across OSTP, DPC, the Department of Education, NSF, and DOE, among others. Other NSTC activities, including the National Nanotechnology Initiative and an initiative in quantum computing, are elaborated below.

## Public-Private Collaboration

OSTP realizes that some of the best ideas for furthering advances in science and technology come from research labs and universities throughout the country. That being so, OSTP works hard to build collaborative relationships with the private sector and to identify new approaches for furthering Administration priorities.

A great example of an ongoing collaboration is the USDA “Apps for Healthy Kids” challenge, a collaborative initiative of OSTP and the U.S. Department of Agriculture’s Food, Nutrition and Consumer Services and Center for Nutrition Policy and Promotion. Announced by the First Lady in March 2010 as part of her effort to fight childhood obesity, Apps for Healthy Kids challenges game and software developers to leverage the Department of Agriculture’s gold-standard nutritional data—available for free download at Data.gov—to develop innovative, fun, and engaging tools and games that help kids and their parents to eat better and be more physically active. Specifically, the competition seeks to leverage the recently released MyPyramid 1,000-food database to create Web or mobile-based apps to teach core concepts of healthy living.

### Collaboration Flagship: S&T Expert Networking

*Other states indicate themselves in their deputies . . . but the genius of the United States is not best or most in its executives or legislatures, nor in its ambassadors or authors or colleges or churches or parlors nor even in its newspapers or inventors . . . but always most in the common people.*  
Walt Whitman

Our commitment to openness means more than simply informing the American people about how decisions are made. It means recognizing that government does not have all the answers and that public officials need to draw on what citizens know.

Over the past decade, the world has seen a dramatic increase in the pace, complexity and social significance of technological changes. There have been significant advances in areas such as computer and communications technologies, biotechnology, and nanotechnology, many of which have had repercussions in business, government, society, and the environment. In order to address new and long-standing challenges posed by technological changes, inform legislators and policy-makers on the significance and impact of future technologies, and to educate and engage the public, our nation must find creative and innovative ways to enable the brightest scientific and engineering minds and the general public to better engage in the decision-making process.

**Spotlight on Collaboration: Public-Private Partnership for Public Health—Text4baby**

Text4baby is a free mobile information service designed to promote maternal and child health. An educational program of the National Healthy Mothers, Healthy Babies Coalition (HMHB), Text4baby provides pregnant women and new moms with information they need to take care of their health and give their babies the best possible start in life. Women who sign up for the service by texting BABY (or BEBE for Spanish) to 511411 receive free SMS text messages each week, timed to their due date or baby’s date of birth. These messages focus on a variety of topics critical to maternal and child health: immunization, nutrition, seasonal flu, prenatal care, emotional well being, drugs and alcohol, labor and delivery, smoking cessation, breastfeeding, mental health, birth defects prevention, oral health, car seat safety, exercise and fitness, developmental milestones, safe sleep, family violence, and more.

Text4baby is made possible through a broad, public-private partnership of more than 100 entities, including government, corporations, academic institutions, professional associations, tribal agencies, and non-profit organizations. Founding partners include HMHB, Voxiva, CTIA - The Wireless Foundation, and WPP. Johnson & Johnson is the founding sponsor, and premier sponsors include WellPoint, Pfizer, and CareFirst BlueCross BlueShield. U.S. government partners include OSTP, the Department of Health and Human Services, and the Department of Defense Military Health System. Voxiva provides the mobile health platform, and participating wireless service providers generously provides free messaging services. Implementation partners include BabyCenter, Danya International, Syniverse Technologies, Keynote Systems, and The George Washington University. MTV Networks is a media sponsor. The service now has over 26,000 subscribers

In his Memorandum on Scientific Integrity, President Obama declared that science and scientific processes should inform and help guide public policy. For this reason, OSTP is working to develop the policy and process to incorporate “expert networking” into scientific decision-making for the National Science and Technology Council—the Cabinet-level council that coordinates science and technology policy in the Executive Branch—enabling access to a wider diversity of scientific and technical experts faster than ever before.

With the rise of social networking technology—including such household brand names as Facebook and MySpace—we now have cheap and easy ways to connect large numbers of people for communication and collaboration. Whereas social networking sites like Facebook connect people based on their university and workplace affiliations, privately branded “expert networking” sites in the private sector connect geographically distributed experts into on-line



communities to provide advice and counsel to banks and financial institutions. When a bank needs an expert on solar power in China, it taps the network for one or more experts to answer questions.

For example, pharmaceutical companies started Innocentive, a Web-based community for connecting scientific problem solvers to problems they could solve for a monetary reward. This “open innovative marketplace” has grown to more than a million participants. Peer-to-Patent, another expert network, connects the United States Patent and Trademark Office to a network of self-selected, volunteer scientists and technologists who provide expertise to patent examiners to inform their ability to determine if a patent application represents an invention that is truly new and non-obvious, as the law requires in order to issue a patent. Peer-to-Patent enables government officials in the patent office to gain access to the know-how and expertise of academic and industry scientists and get the answers that they need faster and more accurately than they could looking in books or databases themselves. Peer-to-Patent works differently to Innocentive, in that it creates online teams of people who work together to find and refine information for the USPTO. The group does some of the work of vetting the information before it goes to the government official.

The NSTC will explore different options for leveraging expert networks to improve its access to scientific expertise, such as leveraging a \$12.2 million investment already made by the National Institutes of Health in creating a seven-university “Facebook for scientists” known as Vivo. Vivo is designed to connect researchers around the country and form an online “rolodex” of scientific experts. OSTP is also in conversation with Expert Labs at AAAS, which is building a platform called Think Tank. This exciting project publishes scientific (or other) questions or challenges and solicit responses from existing networks, including Facebook or, soon, from Vivo. Rather than having to go to a single .gov website, a “solver” could participate from any social network of which he is already a member.

We eagerly welcome your suggestions for options we should explore in order to realize the vision of an expert network that allows NSTC to:

- Pose policy questions to a scientific audience for its input;

- Request data and information to inform decision-making;
- Invite edits to drafts of published policy papers and proposals; and
- Solicit the drafting of papers and proposals relating to science and technology.

The software platform will enable a process that facilitates experts to self-select and volunteer to collaborate with one another. Additionally, it will enable OSTP and the chairs of NSTC sub-committees to:

- Create a task (e.g. a question, problem, project);
- Search for and identify matching experts or invite experts to self-select;
- Assign an expert to work on a specific problem; and/or
- Enable experts to volunteer to work on a specific problem;
- Set up a space and basic tools for the group working on the task to collaborate;
- Enable participants to rate one another's work.

We anticipate first trials of the process by Q3 of 2010 when the Vivo system should begin to be operational and Think Tank will have integrated with Vivo, Facebook, and other popular networks. What other platforms should we consider? How do you envision this functioning to be most useful and attractive for all? How should we pose the questions and give feedback?

Prior to launching the pilot, OSTP/NSTC will post the design specification online for public input on an expert network.

## Conclusion and Next Steps

This plan is OSTP's draft proposal for how we can become more effective at what we do; gather better information informed by the best understanding of science, technology, and innovation; and collaborate with *you* on solving the challenges America faces. This plan is not a static document, and it represents only the very beginning of a journey towards furthering openness and effectiveness in the science, technology, and innovation work that we do at OSTP.

We invite each of you to comment on and contribute to this plan. Tell us what you like, what's missing, and what we can do better. We ask you to consider the questions we have asked ourselves in the creation of this plan:

- How can we create a more open and transparent OSTP?
- How can we facilitate manageable and useful participation in the work of OSTP?
- How can we foster collaboration to achieve the goals we have laid out?

By fostering input and ongoing collaboration, OSTP will continue a dialogue with the American public to fulfilling its mission: ensuring that the policies of the Executive Branch are informed by sound science; and ensuring that the scientific and technical work of the Executive Branch is properly supported and coordinated so as to provide the greatest benefit to society.

## **Appendix A: Staff Profiles**

Aneesh Chopra

*Q. Who are you, and what did you do before you started working for President Obama?*

My name is Aneesh Chopra. I serve as Chief Technology Officer and Associate Director. Prior to serving in these roles, I served as Virginia's Secretary of Technology, a cabinet level position that was created back in 1999, looking at ways in which technology could improve government operations, and serve as a catalyst for economic growth.

*Q. What do you actually do?*

In my capacity as Chief Technology Officer I essentially focus on three things. I focus on how we can achieve the right policy framework to ensure that we take full advantage of technology, data, and innovation, both to transform the nation's economy and to improve the lives of everyday Americans. Second, I focus on platform initiatives, that is, areas where modest public sector engagement might yield dramatic improvements in the private sector. Here we talk about work in Health Care Information Technology, Smart Grid, and our new initiatives in the area of education technology. Last but not least, I focus on public-private partnerships, assuming that where there is no new money in the budget, and no new changes in Federal legislation, how might we advance the ball on technology, data, and innovation to advance our national priorities.

*Q. What are some specific things that you have gotten done that you are proud of?*

My first homework assignment on the President's first full day in office was to establish a set of recommendations to promote a culture of Open Government. This led to an unprecedented public engagement program, using the principles of Open Government to build a more Open Government. Over the course of roughly six weeks, we engaged the American people with a blank sheet of paper asking them to, "Tell us how you would like to see our government embody the principles of transparency, participatory democracy, and collaboration." This process yielded over 900 ideas and a community that voted those ideas up and down, and led to a series of conversations through a blog discussion forum where we surfaced over 1000 comments, and led to very concrete recommendations, and we gave the virtual pen in the hands of the American people. Over 300 drafts of the Open Government Directive were all synthesized by the

American people. That led to our biggest accomplishment in December 2009: the publication of an Open Government Directive. A vehicle to spur a new culture in Washington; one that is far more open and transparent than what we saw coming in. My second area of focus has been on harnessing data, technology, and innovation for economic growth. And in this capacity, I serve as one of the steering committee members within the White House for the President's strategy for innovation. A strategy he unveiled in September when I had the pleasure and privilege of joining him on Air Force One to upstate New York, where before a group of students he laid out a foundational strategy that would ensure that we are prepared in this country for sustainable growth and quality jobs.

Last, I'm very proud of the work we've done in Health Care Information Technology under the able leadership of Dr. David Blumenthal, our national coordinator for HealthIT. Over the course of 2009 we engaged the American people with new and creative ways to figure out what would it mean to participate in a 21<sup>st</sup> century health care system. One that provided you access to your medical records within 48 hours of request, or to ensure the information about you and your loved ones can be transferred as your request to a physician that has been asked to provide a consultation. These conversations lead to a regulation that we proposed in December, a rule on Health Care Information Technology data standards, and the qualifications necessary to access some \$20+ billion in incentives payments, made available by the President, in the Recovery Act. This rule, we believe, struck the balance between flexibility to spur innovation, as well as structure, so that we can ensure that when these patients access this 21<sup>st</sup> century system, they know that their medical information can flow safely and securely and with due respect to their privacy. That regulation came out at the end of the year, and early indications are that we got that balance just right.

*Q. What contribution would you like to make to OSTP's open government strategy?*

It is our hope in the Office of Science and Technology Policy, as demonstrated with how we approached the recommendations assignment by the President, that we embody the principles of Open Government in how we conduct our business. We intend to be as transparent as any office of the President, as well as any federal agency, to serve as a leading light if possible so that other agencies can see what it might mean to be fully transparent. We're going to aspire as much as

we possibly can to engage the American people to address these big, difficult challenges that are before us, often times tapping into expertise that might exist in pockets all over the country that normally don't think of themselves as engaged in Washington or know how to hire a lobbyist. And, last but not least, we believe in the execution of government policy, we absolutely can take full advantage of the collaboration principles of Open Government, so that we can achieve those results at a much lower cost and with far greater impact. So these are the goals that we have in the Office of Science and Technology Policy, and frankly it's our hope that you, in participating in this particular forum, will find new and creative ways to engage with your government and be a part of the effort to change this country and to make sure that Washington works for you.

**Tom Kalil**

*Q. Who are you, and what did you do before you started working for President Obama?*

My name is Tom Kalil. I am the Deputy Director for Policy at the Office of Science and Technology Policy, and also serve as a senior advisor on science, technology and innovation to the White House National Economic Council. This means that I get to go to twice as many staff meetings, but don't get twice the salary.

I am on loan from UC Berkeley, where I served as Special Assistant to the Chancellor for Science and Technology, and helped the campus develop multidisciplinary research and education initiatives at the intersection of bio, info, micro and nanotechnologies. In 2007 and 2008, former President Clinton asked me to be the Chair for Global Health for the Clinton Global Initiative, which allowed me to work on issues such as newborn health, micronutrient deficiency, and neglected tropical diseases. I was also a senior fellow with the Center for American Progress, where I co-authored a proposal for a National Innovation Agenda. This is my second tour of duty in the White House. From 1993-2001, I was on the staff of President Clinton's National Economic Council. I helped lead a number of Presidential science and technology initiatives, such as the National Nanotechnology Initiative, and the Clinton-Gore efforts related to information and communications technologies.

*Q. What do you actually do?*

My role in the office is to help Dr. Holdren generate new ideas, identify key issues that OSTP really wants to devote significant time and energy to, and ensure that we are making progress on the implementation of the President's agenda. In the same way that a venture capitalist is interested in high quality "deal flow", I am interested in high quality "idea flow." This requires a great deal of interaction with my colleagues in the White House, the leadership of federal departments and agencies, members of Congress, the research community, industry, and civil society.

I supervise four phenomenal, hard-working OSTP staff: Hillary Chen, our global health expert; Kumar Garg, who is leading our efforts on the President's "Educate to Innovate" campaign to improve STEM education; Kei Koizumi, our R&D budget guru; and Robynn Sturm, who is driving the federal government's adoption of prizes, challenges, and open innovation.

I also try to provide all OSTP staff with suggestions for what they should work on and how they can "get stuff done." Being an effective OSTP staffer requires an ability to communicate with non-experts, build coalitions of public and private stakeholders, recognize and seize opportunities, understand the sequence of decisions and events needed to make and implement public policy, have influence in the absence of formal authority, and develop strong relationships based on trust, mutual understanding and reciprocity. It is also critical that OSTP staff have something that they are passionate about, because getting things done in an organization as complex as the federal government generally requires a sustained effort.

*Q. What are some specific things that you have gotten done that you are proud of?*

Policy-making is a team sport. Everything that I have accomplished at OSTP is the result of collaboration with many colleagues and the President's strong commitment to science, technology and innovation. Some of the decisions and initiatives that I have contributed to that I think are important include:

- The decision by the President and the Congress to include R&D funding in the Recovery Act, and to provide sustained increases in funding for R&D in the President's FY10 and FY11 budget;

- The release of the President’s *Strategy for American Innovation*, which was co-authored by the National Economic Council and the Office of Science and Technology Policy; and
- The launch of the President’s “Educate to Innovate” campaign—designed to encourage boys and girls to excel in Science, Technology, Engineering and Mathematics.

*Q. What contribution would you like to make to OSTP’s open government strategy?*

I’d like OSTP staff to ask the world the questions they are asking themselves, and to create more opportunities for meaningful and informed participation. I’ve done that in a few instances since joining OSTP:

- Who are the next generation of “Lickliders?”  
[www.whitehouse.gov/blog/2009/09/28/who-are-next-lickliders](http://www.whitehouse.gov/blog/2009/09/28/who-are-next-lickliders)
- What are the “grand challenges” of the 21<sup>st</sup> century, and how should the United States pursue them? [www.whitehouse.gov/blog/2010/02/04/grand-challenges-21st-century](http://www.whitehouse.gov/blog/2010/02/04/grand-challenges-21st-century)
- How could we harness the creativity of students to develop the next generation of broadband applications? [www.whitehouse.gov/blog/2010/03/25/role-student-led-innovation-killer-apps-broadband-networks](http://www.whitehouse.gov/blog/2010/03/25/role-student-led-innovation-killer-apps-broadband-networks)

Some of the other questions that I am currently exploring include:

- How can the federal government help create a “virtuous circle” of innovation at the intersection of biology, the physical sciences, and engineering, as called for by several recent National Academy of Sciences reports?
- How can the Obama Administration upgrade the capacity of different departments and agencies to promote innovation that is related to their mission?
- How might the Obama Administration increase the prominence of science, technology, innovation and entrepreneurship in U.S. global development and global health policy?
- How can researchers in industry, academia, and national labs work together to sustain “Moore’s Law” for decades to come—surpassing the limits of today’s silicon CMOS (computer chip) technology?



**Diana Zunker**

*Q. Who are you, and what did you do before you started working for President Obama?*

My name is Diana Zunker, and I am the Administrative Officer for the Office of Science and Technology Policy. I have been with OSTP for a little over three years. Before I came to OSTP I worked for the United State Air Force as a civilian. I was a secretary for the Mission Support Group Commander at Bowling Air Force base.

*Q. What do you actually do?*

My role is to serve as administrative resource on a wide variety of personnel issues for the office. I handle all the incoming processes for staff coming on board for OSTP, and I'm also the point of contact for interagency agreements for our detailees that are joining OSTP for temporary assignment from other government agencies.

*Q. What are some specific things that you have gotten done that you are proud of?*

I'm very proud of having the opportunity to help in the process of staffing our agency with such great people. We have people coming from different agencies, we have students helping in OSTP, and it's a great opportunity to meet all these great people.

**Andrew McLaughlin**

*Q. Who are you, and what did you do before you started working for President Obama?*

My name is Andrew McLaughlin. I am the Deputy Chief Technology Officer, or Deputy Chief Nerd as I'm sometimes known. Before joining the administration last summer, I was at Google, and worked on the Obama-Biden transition in 2008-2009.

*Q. What do you actually do?*

My work at OSTP is focused on three broad areas: one is Open Government, all of the good transparency, collaboration, and participation stuff that we are doing to try to transform the way government works, and to build up the infrastructure that can support that. Second, I work on policy priorities of the President that have tech elements. So we try to be smart advisors and instigators around tech in health care, for example, electronic health records, energy independence, smart grid and adding information flows to the electricity grid, education

technology, and cyber security. Those are big presidential priorities that have core technology elements. And the third category of things I work on, are the kind of classic Internet and technology policy issues, like regulation of networks, privacy, intellectual property rules that govern our electronic systems, and in addition to all of that I work on whatever Aneesh Chopra or the Chief of Staff's office pitches our way in a given week, which could be just about anything.

*Q. What are some specific things that you have gotten done that you are proud of?*

Well, I'll give you one example of something that I am quite proud of, on December 31<sup>st</sup>, literally hours before the statutory deadline, we published through Health and Human Services the massive set of rules that relate to electronic health records. We have a very ambitious goal of getting every American an electronic health record that they can access anytime, and provide to any health care professional, and that they can use to improve their own care, the way they get medical care, and to get new medical services online that we haven't even thought of yet. Then we can collectively use this as a country to try to improve the way we measure and assess medical interventions, drugs, procedures, labs and so forth. If we can pull this off, it'll be a big part of the revolution in health care that we think Health Care Information Technology can bring. It'll also be a big part of the way we save money and help reduce the cost of our health care system over time. So those rules represent a lot of hard work, and hitting the right balance between common standards that everyone can use, and specificity for particular issues like privacy and security. And we'll be implementing them in the course of the next few years, and that's one of our biggest accomplishments so far.

*Q. What contribution would you like to make to OSTP's open government strategy?*

I think the biggest contribution we want to make this year is to really get right the physical infrastructure that we need: the servers, the hosting, and the cloud computing capabilities that we want. With very user-friendly services that are as good inside the government as things that we've gotten used to outside the government. One of the things that Vivek Kundra over at OMB often says is that, it's kind of telling—and I may add-somewhat depressing—to go from a government office where you've got relatively locked down, poorly designed software that you are stuck with using day in and day out, to go to your bedroom and open up your laptop and have

access to really fantastic, incredible user interfaces that are very intuitive, very powerful, and do the kinds of things that you'd like to be able to do at work much more easily. So if we can marry the physical infrastructure we're trying to build with really awesome user interfaces and online services to become the new foundation that government employees use to get their work done, that would be the biggest thing I'd like OSTP to pull off this year.

### **Susan Brancato**

*Q. Who are you, and what did you do before you started working for President Obama?*

I am Susan Brancato, the OSTP Information Security Officer. Although a security officer sounds ominous, it is a fun and interesting job. It is my job to make sure all national security information is classified and protected appropriately and only those folks that have a "need to know" have access to it.

*Q. What do you actually do?*

What I do every day is not very glamorous, but it is extremely important because in accordance with Executive Order 13526, I oversee all aspects of classifying, safeguarding, and declassifying national security information. It is important to note that information is not classified in a cavalier or light-hearted manner. There are specific categories with stated timelines for the classification of information, and these parameters can only be employed by an original classification authority. There are very few original classification authorities and this authority can only be exercised by the President and those designated by the President. If there is any doubt about the need to classify information, then it should not be classified.

For classified information, it is important to protect it, be sure that it is viewed by only those that have a need to know, and ensure that it is declassified as soon as it no longer meets the standards for classification. Occasionally, there will be a Freedom of Information Act request that will request a Mandatory Declassification Review and those documents require additional reviews that sometimes may require more than one individual's input to determine whether or not the document can be declassified.

*Q. What are some specific things that you have gotten done that you are proud of?*

One of the more glamorous aspects of my job is that a sound information security program requires a lot of education and follow-up and because of that I get to interact with various members of the OSTP staff, the EOP and other Government agencies on a daily basis. These interactions have increased monumentally over the last 15 months, which is a positive increase in the amount of information that is being exchanged, but keeps me pretty busy to ensure that we protect information appropriately and maintain need to know, as appropriate, at all times. Additionally, OSTP has many visitors and participates in large meetings and events throughout the EOP on a regular basis.

*Q. What contribution would you like to make to OSTP's open government strategy?*

I am privileged to be able to assist when necessary to ensure that the visitors are cleared for access into the office or appropriate areas within the EOP and it is a pleasure to know that all citizens now have an opportunity to view the visitor logs and know more of the comings and goings of the many individuals that are either working on or with the many programs that it takes to make our country run or individuals that are recognized for their great contributions to our society. May not be glamorous, but it is the perfect combination of a responsibility-laden and fun job!

### **Hillary Chen**

*Q. Who are you, and what did you do before you started working for President Obama?*

My name is Hillary Chen. I work on Global Health here at Office of Science and Technology Policy [as a Policy Analyst] and before I joined the administration I spent a few years working for the Clinton Global Initiative on their Global Health Team, and spent a year in India working on health and education programs for the Deshpande Foundation.

*Q. What do you actually do?*

Here at OSTP, I work on Global Health, and I also work on the President's awards for science and technology, for example, the National Medal of Science and the National Medal Technology and Innovation.

*Q. What are some specific things that you have gotten done that you are proud of?*

I think one of the most exciting [moments at OSTP has been the] public-private partnership called Text4Baby, which is the first free, nationwide mobile health information service available to pregnant women and new moms all over the country. And the service is really exciting because it's at the front of a whole wave of mobile technologies that are just designed to help address some of the problems that are facing the country. And I hope it will be a really useful service for moms around the country, and families around the country.

*Q. What contribution would you like to make to OSTP's open government strategy?*

Looking forward, there are so many experts in the global health field and so many people thinking about international development right now, that staying in touch with those folks is going to be really important. And I think making sure that their expertise—whether it's on global health, on science, technology, innovation and development more broadly—that those views are incorporated into the policies that are developed in the Administration. I think [this] will be really important.

## **Profiles—In Depth**

### **Shere Abbott, Associate Director for Energy and Environment**

I serve as Associate Director for Energy and Environment of the Office of Science and Technology Policy in the Executive Office of the President. I oversee science policy issues ranging from environmental quality (such as toxics and risks, air and water quality, and hazards) to global environmental change (such as energy and climate, oceans, biodiversity, and ecosystem services). It's a broad portfolio and I have a staff of about 10 people, hopefully growing. But OSTP is a flat organization, so we share policy experts across the various divisions. For example, policy analysts who work in the Technology Division on energy efficiency improvements, such as smart-grid or building retrofits, also work with our climate change experts to help evaluate the impacts these efforts will have on greenhouse-gas reduction. And the Science Division's agricultural biotechnology experts work with our climate change team to understand the relationships between biofuels development, agricultural production, and water availability. These synergies not only help build constructive working relationships across the divisions, they also advance our science policy agendas.

Increasingly, energy and environment issues are interconnected. It makes articulating a coherent agenda and coordinated research programs across the agencies much more challenging. Through the National Science and Technology Council and its Committee on Environment and Natural Resources, my staff and I work with interagency committees to craft research initiatives and programs. And we work closely with the Office of Management and Budget and other offices within EOP to align resources necessary to execute them and to ensure Federally-supported science bears on policy. One of my duties is to oversee the nation's climate science program, known as the US Global Change Research Program. It's about \$2.1B in FY2010 with participation from 13 federal agencies and departments. The climate science program has provided the bedrock of understanding about climate change that has been necessary to develop national and international policies to mitigate and adapt to its impact. The Program published an assessment report last June of climate change impacts here in the US that showed that climate change impacts are already affecting the core systems of our society: transportation, ecosystems, agriculture, business, and energy. The report, *Global Change Impacts in the United States*, was begun in the Bush administration, demonstrating that science can transcend political boundaries, and should continue to do so.

For the US internationally, I serve as the lead delegate to the International Panel on Climate Change, which in spite of the recent controversy over minor missteps in its last report, has successfully aggregated findings of scientists across the continents and assembled experts to establish a still-standing consensus that climate change is real and already happening across the globe.

On a personal level, I am fortunate to have had strong scientific influences in my family and many mentors throughout my career. My father and grandfather were both MIT trained engineers. There were several women scientists on my father's side and some of their books inspired me when I was growing up. I spent summers at a science camp associated with research institutions in Woods Hole, Massachusetts, where I consumed the passion many marine scientists uttered about their work and the water world. I studied biology in college and ecology and natural resource policy in graduate school. After graduate school I came to Washington, DC, to

work at the National Academy of Sciences, directing programs on polar research, international science, science and technology for sustainable development, and global environmental change. Later I served as Chief International Officer of the American Association for the Advancement of Science before heading to the University of Texas at Austin to develop interdisciplinary efforts to advance science and the practice of sustainability. I came back to DC last year to join the Obama Administration and was confirmed by the Senate on April 30, 2009, so I'm approaching my one-year anniversary with the Administration's energy and environment team. The things I am most proud of so far have to do with working toward a national strategy for earth observations. The Administration inherited a debacle of a joint military and civilian satellite program for weather forecasting, storm-tracking, and climate data that was underperforming, over budget, and because of technical and management difficulties, seriously in jeopardy of not achieving its mission. I led an EOP task force for OSTP Director, Dr. Holdren, with representation from the Office of Management and Budget and the National Security Council that worked assiduously with the three partnering agencies (NOAA, NASA, and DOD) to develop a plan for mission-success. I am committed to interagency, cooperative efforts, and this one was particularly challenging. In the end, the team developed a plan for restructuring the program that was good for the nation, good for the agencies, and good for science, and provided a framework for success. I am proud of every participant in the process because of the professionalism that everyone brought to the effort to help achieve the President's priorities in climate change.

### **Tammy Taylor, Senior Policy Analyst**



As an engineer and Senior Policy Analyst here in the White House Office of Science and Technology Policy, I am enjoying a rewarding career exploring issues that surround such complex questions as “What is the best way to respond to a radiological emergency, such as an accidental contamination event or intentional nuclear incident?” and “How can America best safeguard nuclear materials and support nonproliferation?”

But my future was not always so assured.

When I started college, my primary objective was rather simple: to graduate and obtain a secure job. My family had moved a total of six times during my childhood as a consequence of layoffs that affected the mining industry, where my father was employed. My parents were adamant that a college education could result in stable employment opportunities. I was interested in engineering right from the beginning, but found college overwhelming in comparison to my small town upbringing in New Mexico and Arizona. I also found it challenging to be in a discipline that was clearly under-represented by women and craved the companionship of girlfriends. Three-quarters of the way through freshman year, I quit. I packed up my dorm room and convinced my mother to move me home during spring break.

My reprieve was brief. Monday morning following spring break my parents moved me right back and I asked the Dean of Engineering to give me the opportunity to finish my freshman year. He reinstated my scholarships and provided me the gift of a second chance. It was during that final one-quarter of my freshman year that I came to appreciate that your “roots”—as valuable as they can be—can sometimes root you a bit too securely to familiar places and situations and work against your deepest desire to move on and try new things. It takes courage, and support from a community, to break ties and form new ones.

Happily I found that support from teachers, mentors and fellow students, and the pursuit of education became my grand passion for the next nine years. I worked in cooperative education programs throughout undergraduate and graduate school, earning a Bachelor’s of Science in civil engineering from New Mexico State University and a Masters and PhD in environmental engineering from Georgia Institute of Technology. I intended to pursue a career in academia as a research professor, but prior to accepting a position opted to delay that path to acquire post-doctoral experience at Los Alamos National Laboratory (LANL). My experience at LANL changed my career ambitions. I found my true calling in a career supporting our national security through nuclear nonproliferation; research to support emergency responder preparedness; and environmental remediation. I turned down my academic opportunity and joined the LANL Chemistry Division as a research engineer two years after starting my post-doc.



I have three pieces of advice, particularly for women considering a career in science, technology, engineering, or mathematics (STEM), all formed as a consequence of my personal path in an engineering and science career.

First, you don't have to love math or science to earn a career in STEM. You only have to possess courage and determination. The benefits of a career in STEM far outweigh the challenges of math and science. Second, take your education to the highest level that you can. A doctorate in a STEM discipline provides not only a stable employment platform but the opportunity to choose your career direction and be your own boss. Third, volunteer early and often. I started tutoring in the sixth grade and I have learned so much more from the people that I have tutored than they have learned from me. Volunteer as a tutor, work in a soup kitchen, or clean medians in your neighborhood. Do what you can to give back to your community and learn from the people you meet on your journey. It's as certain as a law of physics: you will get back 100-fold.

## **Appendix B: Biographical Profiles for the Members of PCAST**



**John P. Holdren** (co-chair) is Assistant to the President for Science and Technology and Director of the Office of Science and Technology Policy (OSTP) in the Executive Office of the President. Prior to this appointment, Dr. Holdren was a Professor of Environmental Policy and Director of the Program on Science, Technology, and Public Policy at Harvard University's Kennedy School of Government. He also served concurrently as Professor of Environmental Science and Policy in Harvard's Department of Earth and Planetary Sciences and as Director of the independent, nonprofit Woods Hole Research Center. He is a member of the National Academy of Sciences, the National Academy of Engineering, and the American Academy of Arts and Sciences, as well as a former President of the American Association for the Advancement of Science and recipient of the MacArthur Foundation Prize Fellowship.



**Eric S. Lander** (co-chair) is the Director of the Broad Institute of MIT and Harvard and co-chair of PCAST. He is also Professor of Biology at MIT, Professor of Systems Biology at Harvard Medical School and former member of the Whitehead Institute for Biomedical Research. He was one of the principal leaders of the Human Genome Project, recipient of the MacArthur Foundation Prize Fellowship and is a member of both the National Academy of Sciences and Institute of Medicine. Over the past 15 years, Eric and colleagues have developed many of the key tools and generated many of the key information resources of modern mammalian genomics. Eric earned his B.A. in mathematics from Princeton University in 1978 and Ph.D. in mathematics from Oxford University in 1981 as a Rhodes Scholar. He was an assistant and associate professor of managerial economics at the Harvard Business School from 1981-1990.



**Harold Varmus** (co-chair) is the President of Memorial Sloan-Kettering Cancer Center and co-chair of PCAST. Dr. Varmus served as the Director of the National Institutes of Health from 1993 to 1999. Much of Dr. Varmus' scientific work was conducted during 23 years as a faculty member at the University of California, San Francisco, Medical School, where he and Dr. J. Michael Bishop and their co-workers demonstrated the cellular origins of the oncogene of a chicken retrovirus. This discovery led to

the isolation of many cellular genes that normally control growth and development and are frequently mutated in human cancer. For this work, Bishop and Varmus received many awards, including the 1989 Nobel Prize for Physiology or Medicine. He is a member of the National Academy of Sciences and Institute of Medicine and recipient of the National Medal of Science.



***Rosina Bierbaum***, a widely recognized expert in climate-change science and ecology, is Dean of the School of Natural Resources and Environment at the University of Michigan. Her PhD is in evolutionary biology and ecology. She served as Associate Director for Environment in OSTP in the Clinton

Administration, as well as Acting Director of OSTP in 2000-2001. She is a member of the American Academy of Arts and Sciences.



***Christine Cassel*** is President and CEO of the American Board of Internal Medicine and previously served as Dean of the School of Medicine and Vice President for Medical Affairs at Oregon Health & Science University. A member of the US Institute of Medicine, she was named the second most influential

physician executive in the US by Modern Healthcare. She was a member of the President's Commission on Consumer Protection and Quality in the Health Care Industry during the Clinton Administration, and is an expert in Geriatrics, Bioethics, and Healthcare Quality.



***Christopher Chyba*** is Professor of Astrophysical Sciences and International Affairs at Princeton University and a member of the Committee on International Security and Arms Control of the National Academy of Sciences. His scientific research focuses on solar system exploration and his security-related work

emphasizes nuclear and biological weapons policy, arms control, and proliferation. He served on the White House staff from 1993 to 1995 at the National Security Council and the Office of Science and Technology Policy. In 2001, he was awarded a MacArthur Prize Fellowship for his work in both planetary science and international security.



**S. James Gates Jr.** is the John S. Toll Professor of Physics and Director of the Center for String and Particle Theory at the University of Maryland, College Park. Currently Dr. Gates is a member of the Maryland State Board of Education. He has served as a consultant to the National Science Foundation, the U.S.

Departments of Energy and Defense, and the Educational Testing Service and held appointments at MIT, Harvard, California Institute of Technology and Howard University. Dr. Gates is a Fellow of the American Physics Society, the American Association for the Advancement of Science and the National Society of Black Physicists.



**Shirley Ann Jackson** is the President of Rensselaer Polytechnic Institute (since 1999) and former Chair of the US Nuclear Regulatory Commission (1995-1999). She is the University Vice Chairman of the U.S. Council on Competitiveness, a member of the National Academy of Engineering, fellow of the American

Academy of Arts and Sciences, and past President of the American Association for the Advancement of Science. She is a member of the Board of the Council on Foreign Relations. Dr. Jackson was the first African American woman to earn a doctorate from MIT. Her policy focus is innovation and technology, energy and the environment, and STEM education, particularly higher education. She is a theoretical physicist with a PhD from MIT.



**Richard C. Levin** has served as President of Yale University since 1993 and is a distinguished economist with interests in industrial organization, the patent system, and the competitiveness of American manufacturing industries, including industrial research and development, intellectual property, and productivity. He is

a leader in US-China cooperation, in research and education, and is a member of the American Academy of Arts and Sciences.



**Chad Mirkin** is George B. Rathmann Professor of Chemistry, Professor of Medicine, Professor of Chemical and Biological Engineering, Professor of Biomedical Engineering, and Professor of Materials Science and Engineering at Northwestern University. He is also the Director of Northwestern's International

Institute for Nanotechnology. He is a leading expert on nanotechnology, including nano-scale manufacturing and applications of nanomaterials in medicine. He is a member of the National

Academy of Engineering, and a recipient of over 50 national and international awards, including the Feynman Prize in Nanotechnology, the \$500,000 Lemelson-MIT Prize, and the Sackler Prize. Mirkin is the cofounder of three companies, Nanosphere, NanoInk, and Auarsense, all of which are commercializing applications of nanotechnology in medicine and the semiconductor industry.



**Mario J. Molina** is a Professor of Chemistry and Biochemistry at the University of California, San Diego and the Center for Atmospheric Sciences at the Scripps Institution of Oceanography, as well as Director of the Mario Molina Center for Energy and Environment in Mexico City. He received the Nobel Prize in Chemistry in 1995 for his role in elucidating the threat to the Earth's ozone layer of chlorofluorocarbon gases. The only Mexican-born Nobel laureate in science, he served on PCAST for both Clinton terms. He is a member of both the National Academy of Sciences and the Institute of Medicine.



**Ernest J. Moniz** is the Cecil and Ida Green Professor of Physics and Engineering Systems, Director of the Energy Initiative, and Director of the Laboratory for Energy and the Environment at MIT. His research centers on energy technology and policy in a low-carbon world and on nuclear proliferation issues. He served as Under Secretary of the Department of Energy (1997-2001) and Associate Director for Science in the White House Office of Science and Technology Policy (1995-1997).



**Craig Mundie** is Chief Research and Strategy Officer at Microsoft Corp. In this role, he oversees one of the world's largest computer-science research organizations and is responsible for the company's long-term technology strategy. Mundie has spent much of his career building startups in various fields, including supercomputing, consumer electronics, healthcare, education and robotics, and remains active in incubating new businesses. For more than a decade he has also served as Microsoft's principal technology-policy liaison to the U.S. and foreign governments, with an emphasis on China, India and Russia. Another long-standing focus for Mundie is privacy, security and cyber-security. Based on this work, he serves on the U.S. National Security Telecommunications Advisory Committee and the Task Force on National Security in the Information Age.



**Ed Penhoet** is a Director of Alta Partners and Chairman of the Board for Immune Design. He serves on the boards of directors of ChemoCentryx, Chimerix, Scynexis, and ZymoGenetics. A co-founder of Chiron, Ed served as the Company's President and Chief Executive Officer from its formation in 1981 until April 1998. He is a member of the Independent Citizens Oversight Committee for the California Institute of Regenerative Medicine (CIRM), and recently served as the as President of the Gordon and Betty Moore Foundation. For 10 years prior to founding Chiron, Ed was a faculty member of the Biochemistry Department of the University of California, Berkeley. Ed is the immediate past Dean of the School of Public Health at the University of California, Berkeley. He is a member of the U.S. Institute of Medicine and the American Academy of Arts and Sciences.



**William Press** is Professor of Computer Science and Integrative Biology at the University of Texas at Austin and has wide-ranging expertise in computer science, theoretical physics, astrophysics, computational biology, and international security. A member of the US National Academy of Sciences, he previously served as Deputy Laboratory Director for Science and Technology at the Los Alamos National Laboratory from 1998 to 2004. He was a Professor of Astronomy and Physics at Harvard University from 1976 to 1998.



**Maxine Savitz** is retired general manager of Technology Partnerships at Honeywell, Inc and has more than 30 years of experience managing research, development, and implementation programs for the public and private sectors, including in the aerospace, transportation, and industrial sectors. From 1979 to 1983 she served as Deputy Assistant Secretary for Conservation in the US Department of Energy. She currently serves as vice-president of the National Academy of Engineering.



**Barbara Schaal** is the Mary-Dell Chilton Distinguished Professor, Washington University. Dr Schaal serves as Vice President of the National Academy of Sciences. She is a plant evolutionary biologist recognized for her work on the genetics of plant species. She is known particularly for her studies that use DNA sequences to understand evolutionary processes such as gene flow, geographical differentiation,

and the domestication of crop species. She graduated from the University of Illinois, Chicago with a degree in biology, and received a doctorate from Yale University in 1974. She was on the faculty of the University of Houston and Ohio State University before joining Washington University in 1980, where she has served as chair of the biology department.



**Eric Schmidt** is Chairman and CEO of Google Inc. and a member of the Board of Directors of Apple Inc. Before joining Google, Dr. Schmidt served as Chief Technology Officer for Sun Microsystems and later as CEO of Novell Inc. Prior to his appointment at Novell, Eric was chief technology officer and corporate executive officer at Sun Microsystems, Inc. Before joining Sun in 1983, he was a member of the research staff at Xerox Palo Alto Research Center (PARC), and held positions at Bell Laboratories and Zilog. Eric has a bachelor's degree in electrical engineering from Princeton University, and a master's and Ph.D. in computer science from the University of California, Berkeley. In 2006, Eric was elected to the National Academy of Engineering, which recognized his work on “the development of strategies for the world's most successful Internet search engine company.”



**Daniel Schrag** is the Sturgis Hooper Professor of Geology in the Department of Earth and Planetary Sciences at Harvard University and Professor of Environmental Science and Engineering in the School of Engineering and Applied Sciences. He is also Director of the Harvard University Center for Environment. He was trained as a geochemist and has employed a variety of methods to study the carbon cycle and climate over a wide range of Earth's history, using those insights to better constrain how the Earth will be affected by climate change in the future. Awarded a MacArthur Prize Fellowship in 2000, he has recently been working on technological approaches to mitigating future climate change including geologic carbon sequestration.



**David E. Shaw** is the chief scientist of D. E. Shaw Research, where he leads an interdisciplinary research group in the field of computational biochemistry. He is the founder of D. E. Shaw & Co., an investment and technology development firm. Dr. Shaw is a former member of PCAST under President Clinton and a member of the executive committee of the Council on Competitiveness, where he co-chairs the

steering committee for the Council's federally funded High-Performance Computing Initiative. He is a fellow of the American Academy of Arts and Sciences and serves on the Computer Science and Telecommunications Board of the National Academies.



*Ahmed Zewail* is the Linus Pauling Professor of Chemistry and Physics, and Director of the Physical Biology Center at Caltech. Dr. Zewail was awarded the Nobel Prize in Chemistry in 1999 for his pioneering work that allowed observation of exceedingly rapid molecular transformations. He is an Egyptian-American, widely respected not only for his science but also for his worldly efforts, especially in the Middle East, as a voice of reason. Dr. Zewail holds forty honorary degrees and is a member of many societies including the National Academy of Sciences and the American Philosophical Society. Postage stamps have been issued to honor his contributions to science and humanity.