

Testimony of

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Subcommittee on Technology and Innovation

An Overview of the Fiscal Year 2013 Budget
for the
National Institute of Standards and Technology

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Chairman Quayle, Ranking Member Edwards, and members of the Subcommittee, thank you for the opportunity to appear before you today to present the President's Fiscal Year (FY) 2013 budget request for the National Institute of Standards and Technology (NIST). This budget reflects the important role that NIST plays as part of President Obama's "*Blueprint for an America Built to Last*." As the President said recently in Annadale, Virginia, "[An] economy built to last demands that we keep doing everything we can to... keep strengthening American manufacturing." Secretary of Commerce John Bryson amplifies that message when he tells us that in order to create good paying jobs, we need to help more American businesses "*build it here and sell it everywhere*." The proposed FY 2013 budget reflects NIST's critical role in the Administration's efforts to strengthen manufacturing through critical investments in key research and development areas.

The NIST mission is to promote U.S. innovation and industrial competitiveness through measurement science, standards and technology. This mission is very well-aligned with the priority goals as articulated by the President. The FY 2013 budget for NIST reflects that alignment.

The NIST budget is comprised of three discretionary spending accounts and two new proposed mandatory spending accounts.

Mr. Chairman, the President's discretionary funding request for NIST is \$857 million (excluding transfers), an increase of \$106.2 million over FY 2012. More than half of the proposed increased funding would be focused on advanced manufacturing research both at NIST laboratories and through a new industry-led consortia program. This budget was carefully crafted to address pressing needs for standards and measurement work in emerging technology areas and provide seed funding to encourage industry and academia to come together to address common technology problems too large for individual institutions to tackle. Moreover, this budget is consistent with the President's Plan for Science and Innovation and the goals of the America COMPETES Reauthorization Act of 2010, both of which call for significant increases in basic federal R&D funding to make America more competitive.

For the NIST Scientific Research and Technical Services (STRS) account, which funds our laboratory programs, the budget requests \$648 million to accelerate the development of standards, technology, and measurement science in areas as diverse as advanced manufacturing technologies, cybersecurity, forensics and interoperable communications. The request reflects a net increase of \$81 million over the FY 2012 level. The request will help ensure that NIST research laboratories, facilities and service programs continue to work at the cutting edge of science to ensure that U.S. industry, as well as the broader science and engineering communities, have the measurements, data and technologies they need to further innovation and industrial competitiveness.

For the NIST Industrial Technology Services (ITS) account, the budget requests \$149 million, an increase of \$21 million over the FY12 enacted level. The account includes NIST's external programs: the Hollings Manufacturing Extension Partnership (MEP) program; and the proposed Advanced Manufacturing Technology Consortia (AMTech) program.

The request includes \$128 million for the MEP program; a slight decrease from the FY 2012 enacted level. The MEP is a Federal-state-industry partnership that provides U.S. manufacturers with access to technologies, resources and industry experts. MEP's more than 1,400 field staff works with small- and mid-sized U.S. manufacturers to help them create and retain jobs, save time and focus on the bottom line to help increase profits. The request also includes \$21 million for the AMTech program. This new program will establish industry-led consortia to identify and prioritize research projects supporting long-term industrial research needs. AMTech creates the incentive for manufacturers to share financial and scientific resources with universities, state and local governments and non-profits. The proposed program is a critical component of the Administration's emphasis on advanced manufacturing as a way to accelerate innovation and create high-quality U.S. jobs.

The budget requests \$60 million for the Construction of Research Facilities (CRF) account; a \$4 million increase over the FY 2012 enacted level. Within that request are two components: \$48.2 million for NIST's routine maintenance and repair budget; and \$11.8 million for the Boulder Laboratories Building 1 Wing 6 Renovation. Critically needed renovations to the 60-year-old Building 1 in Boulder began in FY 2010. The building houses the majority of research and measurement laboratories on the NIST-Boulder campus, supporting discovery and development in a number of critical areas, including public safety communications and telecommunications, precision timing, hydrogen energy sources, electromagnetic interference testing, and quantum computing.

The Administration's budget request for NIST also includes two mandatory funding initiatives. The first mandatory proposal is directed toward Public Safety Communications research and was included in the recently passed Middle Class Tax Relief and Job Creation Act of 2012 (PL 112-96). This legislation makes funds available from the Public Safety Trust Fund to NIST to help research and develop cutting-edge, interoperable wireless technologies for public safety users – the need for which was clearly demonstrated on September 11, 2001, during the rescue efforts at the World Trade Center towers. I will discuss this program in further detail later in my testimony.

Finally, as part of the Administration's efforts to revitalize manufacturing, the President's budget proposes a \$1 billion mandatory account to establish a National Network for Manufacturing Innovation (NNMI), which aims to promote the development of manufacturing technologies with broad applications through collaboration between NIST, the Department of Defense, the Department of Energy, and the National Science Foundation.

Mr. Chairman, also included in this request are scientific and programmatic initiatives that are tied to the overarching themes of this budget: Advanced Manufacturing, Cybersecurity, Advanced Communications, Forensic Science, Disaster Resilience and Technology Transfer. These themes directly relate to the President's Blueprint for an America Built to Last – a blueprint for an economy built on American manufacturing.

Advanced Manufacturing – Building Prosperity Through Innovation

Manufacturing is critical to the U.S. economy. As President Obama said in his 2012 State of the Union address, “*We have a huge opportunity, at this moment, to bring manufacturing back. But we have to seize it.*” “*The blueprint for an economy build to last,*” he said, “*begins with American manufacturing.*” By itself, if the U.S. manufacturing sector were a country, it would be the 9th largest economy in the world.¹ Over 11 million Americans have manufacturing jobs.² Many of these are high-quality jobs.³ Total hourly compensation in the manufacturing sector is, on average, 21% higher than that in the services sector.⁴ After ranking as the world’s largest manufacturer for more than a century, the U.S. is facing some stiff competition and has lost ground to China on total volume of its manufacturing output. It has also slipped below Germany, Korea, and Japan in the rankings of research and development manufacturing intensity, a critical indicator of future job-creating innovation.⁵

However, during the past two years of the Obama Administration, we have begun to see positive signs in American manufacturing: the manufacturing sector adding more than 400,000 jobs since December 2009; and more companies “in-sourcing” - bringing jobs back and making additional investments in the United States. We are seeing, for the first time since the late 1990s, an increase in manufacturing jobs.⁶

Even so, today’s challenges require stepping up efforts to enhance and strengthen the Nation’s underlying technical infrastructure, which is integral to our innovation and advanced manufacturing capabilities. Thus, the NIST FY2013 budget lays out a robust set of initiatives that cover the range of the manufacturing lifecycle spectrum to reduce the gap between cutting-edge science and development and the deployment of advanced manufacturing technologies. Providing the measurement tools and other essential technical assistance that U.S. manufacturers need to invent, innovate, and produce—more rapidly and more efficiently than their competitors—is a top NIST priority.

To reap the economic benefits of our ability to innovate, our Nation’s manufacturing sector must be able to renew itself by adopting new technology and developing new markets. The Nation’s manufacturers must respond quickly and effectively to an ever-changing mix of requirements, risks, and opportunities, from new regulations to rising energy costs to emerging technologies and markets. The revitalization of the U.S. manufacturing base is critical to driving innovation and job creation in the future, and will play a major role in building an economy that can help raise the standard of living for all Americans.⁷

The recently released *National Strategic Plan for Advanced Manufacturing*, a robust interagency effort led by the Office of Science and Technology Policy in which NIST played a significant role, articulated a number of ways in which we as a Nation can accelerate innovation to benefit

¹ Bureau of Economic Analysis Manufacturing Industry Data Tables 2010

² Bureau of Labor Statistics, 2011 *Employer Costs for Employee Compensation*, Table 6.

³ NSTC *A National Strategic Plan for Advanced Manufacturing* February 2012 pg 2.

⁴ Bureau of Labor Statistics, 2011 *Employer Costs for Employee Compensation*, Table 6.

⁵ NSTC *A National Strategic Plan for Advanced Manufacturing* February 2012 pg 5.

⁶ <http://www.bradenton.com/2012/02/17/3882196/manufacturing-exporting-showing.html>

⁷ Overview to the National Science Board’s *Science and Engineering Indicators 2012*; pp 16-20

advanced manufacturing and bridge the gaps in the present U.S. innovation system, particularly the gap between research and development (R&D) activities and the deployment of technological innovations in domestic production of goods. The plan lays out a robust innovation policy that would help to close these gaps and address the full lifecycle of technology.

The President's FY 2013 budget contains several initiatives focused on overcoming manufacturing-related barriers to innovation. We work very closely with numerous other Federal agencies in these efforts, including the Department of Energy's Advanced Manufacturing Office, the National Science Foundation, Department of Defense, and others.

Measurement Science for Advanced Manufacturing

The largest overarching NIST initiative is Measurement Science for Advanced Manufacturing. This \$45 million dollar initiative would fund five specific focus areas and is part of a \$135 million overall investment in manufacturing research at NIST. The focus under this initiative is under 5 specific areas.

- *Metrology Infrastructure and Standards to Support Biomanufacturing*

Under this \$10 million initiative, working closely with industry, the Food and Drug Administration, and standards organizations, NIST will develop the measurement infrastructure needed to gain detailed understanding of biomanufacturing processes and design methods that yield higher-quality therapeutic products. Continuous improvements will enable manufacturing processes that are sufficiently adaptable to accommodate manufacture of next-generation treatments.

- *Measurement Science and Standards to Support Nanomanufacturing*

NIST will invest \$10 million to develop measurement methods to help companies overcome technical barriers to cost effective, high-volume manufacturing of materials, devices, and systems that exploit the exceptional properties exhibited at the nanoscale. This initiative includes \$2 million for nanotechnology related environmental, health, and safety research to address potential risks of nanotechnology based products.

- *Measurement Science and Standards to Speed Development and Industrial Applications of Advanced Materials*

This \$10 million effort will accelerate NIST efforts in support of the national Materials Genome Initiative, an interagency program with the goal of significantly reducing the time from discovery to commercial deployment of new materials. NIST will focus on standard reference databases, data assessment and validation, standards development and implementation, and modeling and simulation tools.

- *Measurement Science and Standards to Support Smart Manufacturing*

\$10 million is slated to support smart manufacturing to exploit advances in sensors, data analytics, modeling, and simulation and integrate these technologies to improve manufacturing performance at all levels, from equipment to factory to supply chain. NIST will develop measurement capabilities and standards for automated in-process quality monitoring and control

for factory-level production systems. NIST will also build a testbed to help industry, university, and government collaborators develop an open standards platform for facilitating the simultaneous engineering of the physical and virtual components of manufacturing systems.

- *NIST Manufacturing Fellowships Program*

The Manufacturing Fellowships program will be funded at \$5 million to provide opportunities for engineers and scientists to work with NIST staff on the measurement and standards required to create cutting-edge tools for manufacturers. Fellowships will be available to qualified researchers from companies and non-profit organizations, as well as to recent recipients of bachelor's or master's degrees in relevant fields.

While the previous programs are supported under the STRS budget, the President's budget strongly supports manufacturing through the NIST Industrial Technology Services (ITS) programs as well, such as the Hollings Manufacturing Extension Partnership or MEP, and the Advanced Manufacturing Technology Consortia program, or AMTech.

Advanced Manufacturing Technology Consortia Program

The proposed \$21 million AMTech program will provide cost-shared funding to industry-led consortia that are focused on developing advanced technologies to address major technical problems that inhibit development and widespread adoption of advanced manufacturing capabilities in the United States. By convening key organizations across the entire innovation lifecycle, AMTech will help to create the infrastructure necessary for more efficient technology transfer. These consortia will identify and conduct precompetitive research to address long-range basic R&D relevant to manufacturing, currently a weak link in the U.S. innovation ecosystem. AMTech will support high-value-added, knowledge-intensive U.S.-made products that respond to new market opportunities and generate high-skilled manufacturing jobs, discover cost-effective methods for making new products that safely exploit nanoscale materials; and develop new types of manufacturing tools and processes that allow cost-effective small batch production and create new market opportunities for small and mid-sized manufacturers.

Hollings Manufacturing Extension Partnership (MEP)

The MEP, a federal-state partnership, has a national network of MEP Centers located in all 50 states and Puerto Rico. There are over 1,400 technical experts associated with the Centers helping small- and medium-sized manufacturers navigate economic and business challenges and connecting them to public and private resources essential for increased competitiveness and profitability.

Focused on U.S. based manufacturers for the past 20 years, MEP continues to modify its suite of services to better serve America's manufacturing base. In support of the President's manufacturing strategy, MEP has recently developed a Supplier Scouting Program to support the current needs of the manufacturers they serve across the U.S. The Supplier Scouting Program is designed to help identify potential business opportunities for small U.S. manufacturers with specific capabilities and capacities that could be utilized by a larger domestic manufacturer. In response to the *Buy America* requirements of federal agencies and the supplier requirements of

the large manufacturers, MEP leverages its vast knowledge of local manufacturer capabilities to identify and pre-qualify supplier capabilities and capacities, and provide assistance to suppliers as needed. To further support this goal, MEP launched a new, searchable, web-based resource – the National Innovation Marketplace - to assist manufacturers in using emerging technologies and finding market opportunities or to move ideas from research in the labs to products. The site will enable businesses and entrepreneurs across the country to easily identify and contact more than 2,000 public-private organizations and initiatives designed to assist them.

In addition to focusing on manufacturing, the NIST FY2013 budget request also outlines investments that: broaden NIST’s collaborations in measurement science with the academia and industry; strengthen and expand programs focused on emerging challenges in secure identification, cybersecurity, and advanced communications technologies; address measurement challenges in forensic science; and provide the measurements and standards to strengthen America’s Physical Infrastructure.

NIST Centers of Excellence

The proposed \$20 million will fund the NIST Centers of Excellence. The NIST Centers of Excellence support collaboration on the front end of the manufacturing spectrum that builds upon a legacy of successful consortia with universities. With the requested funding, NIST will provide grants to establish four competitively selected Centers of Excellence in measurement science areas defined by NIST. The grants to multi- or single-university centers are envisioned to be for multiple years, contingent upon available resources. Each Center of Excellence will provide an interdisciplinary environment where NIST, academic, and industry researchers would collaborate on basic and applied research focused on innovations in measurement science and new technology development.

NIST’s mission to use measurement science and services to support innovation and industrial competitiveness covers an incredible breadth of topics—from pharmaceuticals based on nanotechnology to standards and fire codes for skyscrapers to quantum computers that use individual atoms to store information. To accomplish this mission efficiently, NIST must continually scan the horizons for emerging technologies and maintain excellent ties with both the industry and academic community. Currently, NIST has collaborative research centers—JILA with the University of Colorado, and the Joint Quantum Institute, and the Institute for Bioscience and Biotechnology Research with the University of Maryland. These centers have demonstrated how participation by NIST experts at multiple venues can leverage federal investments and enhance the value of public funding. Cutting-edge research requires detailed, one-to-one exchange of technical know-how and often familiarity with one-of-a-kind instrumentation. To ensure that NIST’s work intersects with the nation’s most productive regional innovation centers, it needs “on the ground” resources near or at those centers.

In addition to making significant discretionary investments to strengthen U.S. manufacturing, the Budget proposes a new, major initiative to catalyze a National Network for Manufacturing Innovation that will support the development of manufacturing technologies with broad applications through one-time mandatory funding of \$1 billion. The President views this one-

time investment as crucial to revitalizing U.S. manufacturing. We look forward to working with the Congress on legislation to support this initiative.

Measurement Science and Standards in Support of Forensic Science

NIST has a long history of collaboration in the area of Forensic Science. This \$5 million proposed initiative will enable NIST to create a strategic program to broadly address the most critical issues in forensic science today, such as new reference methods and technologies for understanding crime scenes and identifying criminals, including the uncertainty and standards associated with those techniques. A major outcome of this initiative will be to strengthen the utility and reliability of forensic evidence in the courtroom. This work also has the potential for significant cost savings for the U.S. justice system by reducing the number of mistrials or retrials related to questions about forensic analysis. One economic analysis of cost savings from forensic DNA testing alone estimated a cost savings of \$35 for every dollar invested.

Public trust in the justice system relies on the validity and certainty of evidence presented to the courts. Increasingly that evidence is gathered and analyzed with innovative forensic technologies. Working with the National Institute of Justice and other agencies, NIST has measurement science research under way in chemical, biological, radiological, and nuclear detection and analysis; fire and explosives analysis; gunshot residue, latent fingerprints, and many other areas. NIST's work in DNA profiling and testing, for example, helped establish the methods now used by all crime laboratories to match individuals to evidence samples. NIST technical expertise would be brought to bear in other areas of forensic science to the benefit of all.

Measurement and Standards for Disaster Resilience and Natural Hazards Risk Reduction

A \$5 million initiative will support the measurement and standards for disaster resilience and reduce the risk from natural hazards. With a large percentage of the nation's buildings and infrastructure clustered in disaster-prone regions, U.S. communities can and do suffer catastrophic losses from extreme events such as hurricanes, tornadoes, wildfires, earthquakes, and flooding. Despite significant progress in disaster related science and technology, natural and technological disasters in the United States are responsible for an estimated \$55 billion in costs in 2011 terms of lives lost, disruption of commercial and financial networks, properties destroyed, as well as the cost of mobilizing emergency response personnel and equipment.⁸ In 2011, three major incidents: the Joplin, Missouri, tornado; Hurricane Irene; and the Texas wildfires alone resulted in over 200 deaths and well over \$10 billion in damages. Critically needed metrics, tools, and standards to ensure community-level resilience currently do not exist. These are needed to enable communities to minimize the impact of such disasters and to recover rapidly from them.

NIST has significant statutory responsibilities in this area, including the National Earthquake Hazards Reduction Program Reauthorization Act of 2004 (PL 108-360); the National

⁸ <http://www.ncdc.noaa.gov/oa/reports/billionz.html>

Construction Safety Team Act (PL 107-231); the National Windstorm Impact Reduction Act of 2004 (PL 108-360); and the Federal Fire Prevention and Control Act of 1974 (PL 93-498).

The requested initiative will fund the development of a public-private partnership program strategy that will work with stakeholder interests in all hazard areas to develop and adopt a national resilience framework and associated resilience models, standards, and policies. Additionally, the funding will help address the R&D gaps to realize the full potential of national resilience. This initiative is focused directly on finding solutions to the six Grand Challenges identified by the President's National Science and Technology Council in June 2005.

Measurement Science to Support Advanced Communications Networks

This \$10 million initiative will support the technological infrastructure, including standards, underpinning broadband communications networks, which have become as essential to today's economy as the electrical power grid was to the Industrial Revolution. To compete effectively in this global business environment, communities and companies will need reliable, secure access to huge amounts of data, available anytime, anywhere. However, the U.S. currently lacks the technology to ensure adequate capacity to achieve a large-scale network capable of this vision. There has been a 5,000 percent growth in demand for wireless internet data in the last three years. Currently, 3 percent of wireless smart-phone customers use up to 40 percent of the total available cell-phone bandwidth causing large bottlenecks in mobile broadband access. Services are striving to address the rapid increase in demand, but new technologies and approaches are needed. Incremental advances in broadband technology or network capacity will not be sufficient to meet the future needs of a hyper-connected world.

This initiative will help support continued operations of the 700 MHz Public Safety Broadband Demonstration (PSBD) Network and to make modifications to allow additional use as a platform for addressing interoperability and performance questions on non-PS next generation communications technologies. It will address three key areas to enable significant innovation in communications in both the commercial and public safety sectors. Benefits expected from funding of the advanced communications initiative include the development of a U.S. broadband network with greatly expanded capacity that requires only a marginal increase in capital and operating expenditures. In addition, it is expected to establish a testbed and build collaboration with the telecommunications industry to help lay the groundwork for an interoperable public safety communications network that seamlessly delivers voice, data, and video to first responders and other emergency personnel through whatever communication avenues are available.

Public Safety Communications Research and Development

In addition to the Advanced Communications initiative, the Middle Class Tax Relief and Job Creation Act of 2012 (PL 112-96) created a mandatory account to help research and develop cutting-edge technologies for public safety users. The September 11th attacks on the World Trade Center highlighted the inadequacies of our communications networks, more than 10 years after September 11th, the United States still lacks a wireless interoperable network capable of linking public safety organizations and workers. First responders and other emergency personnel nationwide currently use a patchwork of incompatible technologies and frequency bands. NIST

will use the funds to work with industry and public safety organizations on research and development of new standards, technologies, and applications that advance public safety communications. This initiative will establish a competitive grants program designed to support research, development, and demonstration projects. The overriding objective is to build a broadband system to allow first responders and other public safety personnel anywhere in the nation to send and receive data, voice, and other communications to work together effectively in response to crises.

National Strategy for Trusted Identities in Cyberspace

The Budget provides an increase of \$8 million to the National Strategy for Trusted Identities in Cyberspace (NSTIC) which builds upon FY 2012 funding of \$16.5 million. The initiative envisions an online environment—the “Identity Ecosystem”—that improves on the use of passwords and usernames, and allows individuals and organizations to better trust one another, with minimized disclosure of personal information. The Identity Ecosystem is a user-centric online environment, a set of technologies, policies, and agreed upon standards, that securely support transactions ranging from anonymous to fully authenticated and from low to high value. It would include a vibrant marketplace that allows people to choose among multiple identity providers—both private and public—that would issue trusted credentials that prove identity. Key attributes of the Identity Ecosystem include privacy, convenience, efficiency, ease-of-use, security, confidence, innovation, and choice. Creating this Identity Ecosystem will require input from the private sector, advocacy groups, public sector agencies and others. The request continues and expands existing efforts to coordinate federal activities needed to implement NSTIC.

Specifically, the FY 2013 request funds competitively selected pilot project grants that will enable the private sector to work with state, local, and regional governments to improve acceptance of Identity Ecosystem components. The selected NSTIC pilot programs will demonstrate innovative frameworks that can provide a foundation for more trusted online transactions and tackle barriers that have, to date, impeded the Identity Ecosystem from being fully realized. This initiative is expected to lead to the emergence of privacy-enhancing, trusted authentication solutions that lead to better protections against cybercrime; improved privacy and protection of data; improved security and interoperability of credentials; improve the resilience of data breach recovery; and a self-sustaining, private-sector-led Identity Ecosystem (by 2015) and its Steering Group that brings together all stakeholders—the private sector, advocacy groups, and public-sector agencies—to address authentication challenges and allow continued expansion of the nation’s online economy.

Boulder Laboratories Building 1 Renovation

NIST is requesting \$11.8 million in FY13 for the Construction of Research Facilities account for the renovation of the Boulder (CO) labs - Building 1. This initiative is part of a comprehensive, multi-year plan for the phased construction of new space and renovation of Building 1. As you may know, Building 1 is nearly 60 years old and houses the majority of NIST research and measurement programs on the agency’s Boulder site. However, the aging building is simply inadequate for the kind of high-precision measurement work conducted there.

The poor condition of Building 1 causes an estimated loss in productivity of at least 20 percent due to the need to repeat experiments to produce quality research results and compensate for poor controls in other ways. Even with the completion of Boulder's Precision Measurement Laboratory later this year, many NIST research projects requiring tight environmental controls will need to continue in Building 1. Renovation of Wing 6, the portion of Building 1 addressed with this initiative, includes a number of laboratories engaged in essential research and technical services such as calibrations used for radio, microwave, and optical frequency equipment in the telecommunications, medical, and scientific fields.

Beyond large research inefficiencies, current laboratory conditions in yet to be renovated wings of Building 1 also pose safety concerns. Ventilation systems do not supply adequate fresh air for modern laboratory work, electrical systems contain asbestos and do not meet current codes, lighting is poor, and most of the building is not protected by a fire sprinkler system contributing to potential life and occupational safety hazards. The current Facility Condition Index for Building 1 is "poor." Extensive upgrades are essential to ensure that the Institute can perform the exacting, precision measurements required to meet its mission.

Summary

The FY 2013 NIST budget request reflects the Administration's recognition of the important role that NIST plays in innovation, as well as the impact that the research and services NIST provides can have on moving the Nation forward by laying the foundation for long-term job creation and prosperity.

More than half of the proposed increased funding in the NIST budget is focused on advanced manufacturing research at NIST laboratories and through new industry-led consortia programs. NIST will continue its mission to work with the private sector to ensure U.S. manufacturers have the research support they need to make the best products in the world and remain globally competitive. The NIST laboratory programs, along with its outreach efforts and standards development work, are dedicated to providing U.S. industry with the tools needed to innovate, compete and flourish in today's fierce global economy.

I look forward to working with you, Mr. Chairman and members of the Committee, and would be happy to answer any questions.

Dr. Patrick D. Gallagher, Director



Dr. Patrick Gallagher was confirmed as the 14th Director of the U.S. Department of Commerce's National Institute of Standards and Technology (NIST) on Nov. 5, 2009. He also serves as Under Secretary of Commerce for Standards and Technology, a new position created in the America COMPETES Reauthorization Act of 2010, signed by President Obama on Jan. 4, 2011.

Gallagher provides high-level oversight and direction for NIST. The agency promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology. NIST's FY 2012 resources total \$750.8 million from the Consolidated and Further Continuing Appropriations Act of 2012 (P.L. 112-55), with an estimated additional annual income of \$62.7 million in service fees, and \$128.9 million from other agencies. The agency employs about 2,900 scientists, engineers, technicians, support staff, and administrative personnel at two main locations in Gaithersburg, Md., and Boulder, Colo.

Gallagher had served as Deputy Director since 2008. Prior to that, he served for four years as Director of the NIST Center for Neutron Research (NCNR), a national user facility for neutron scattering on the NIST Gaithersburg campus. The NCNR provides a broad range of neutron diffraction and spectroscopy capability with thermal and cold neutron beams and is presently the nation's most used facility of this type. Gallagher received his Ph.D. in Physics at the University of Pittsburgh in 1991. His research interests include neutron and X-ray instrumentation and studies of soft condensed matter systems such as liquids, polymers, and gels. In 2000, Gallagher was a NIST agency representative at the National Science and Technology Council (NSTC). He has been active in the area of U.S. policy for scientific user facilities and was chair of the Interagency Working Group on neutron and light source facilities under the Office of Science and Technology Policy. Currently, he serves as co-chair of the Standards Subcommittee under the White House National Science and Technology Council.