Department of Commerce
Technology Administration

Summary of Performance Goals and Measures

Resource Requirements Summary

(Dollars in Millions, Funding amounts reflect total obligations
Information Technology (IT)
Full Time Equivalent (FTE)

Grand Total	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Estimate	FY 2005 Base	Increase/ Decrease	FY 2005 Estimate
US/OTP	7.2	8.2	8.1	9.8	6.7	8.6	0.1	8.7
NIST								
Scientific and Technical Research & Services	283.5	311.0	329.8	358.8	347.9	339.4	75.5	414.9
Industrial Technology Services	301.6	281.3	306.0	310.5	233.4	216.6	-177.4	39.2
Construction of Research Facilities	200.5	37.7	70.6	77.1	75.0	23.1	36.3	59.4
Working Capital Fund	138.9	146.0	171.3	168.9	187.9	163.7	8.7	172.4
NTIS	38.3	34.7	27.7	27.7	51.2	40.0	0.0	40.0
Total Funding	970.0	818.9	913.5	952.8	902.2	791.4	-56.8	734.6
Direct	792.7	637.8	714.3	755.9	662.7	587.3	-65.5	521.8
Reimbursable	177.3	181.1	199.2	196.9	239.5	204.1	8.7	212.8
IT Funding	69.9	70.5	83.4	81.1	70.5			69.3
FTE	3,351	3,207	3,231	3,242	3,316	3,244	-44	3,200

Resource Requirements Summary

(Dollars in Millions. Funding amounts reflect total obligations.)
Information Technology (IT)
Full Time Equivalent (FTE)

US/OTP Performance Goal: Provide leadership in promoting national technology policies that facilitate U.S. pre-eminence in key areas of science and technology

	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Estimate	FY 2005 Base	Increase/ Decrease	FY 2005 Estimate
Under Secretary/Office of Technology Policy (US/OTP)								
Salaries and Expenses	7.1	7.8	7.9	9.5	6.3	8.2	0.1	8.3
Reimbursable	0.1	0.4	0.2	0.3	0.4	0.4	0.0	0.4
Total Funding	7.2	8.2	8.1	9.8	6.7	8.6	0.1	8.7
IT Funding	0.4	0.3	0.3	0.8	0.6			0.6
FTE	39	40	46	42	44	50	0	50

Targets and Performance Summary

OTP Performance Goal 1: Provide leadership in promoting national technology policies that facilitate U.S. pre-eminence in key areas of science and technology

Measure	FY2000 Target	FY2000 Actual	FY2001 Target	FY2001 Actual	FY2002 Target	FY2002 Actual	FY2003 Target	FY2003 Actual	FY2004 Target	FY2005 Target
Support improve American innovation system	New	New	New	New	Activities Complete	Completed	Activities Complete	Completed	Activities Complete	Activities Complete
Advance role of technology in U.S. economic growth and homeland security	New	New	New	New	Activities Complete	Completed	Activities Complete	Completed	Activities Complete	Activities Complete
Strengthen competitive position of American technology industries	New	New	New	New	Activities Complete	Completed	Activities Complete	Completed	Activities Complete	Activities Complete
Strengthen US/OTP's organization, capabilities, and resources to maximize the effectiveness of its activities and services	New	New	New	New	Activities Complete	Completed	Activities Complete	Completed	Activities Complete	Activities Complete

Corresponding Strategic Goal

Strategic Goal 2: Foster science and technological leadership by protecting intellectual property, enhancing technical standards and advancing measurement science.

Rationale for Performance Goal

The Technology Administration's (TA's) Office of the Under Secretary/Office of Technology Policy (US/OTP) serves as a key focal point within the federal government for leadership on civilian technology policy. It supports technology-based growth through a range of programs and policy development activities, addressing both domestic and international matters that work as a whole to identify key policy needs and options, strengthen the capacities for technological innovation by the U.S.'s industry and science and technology (S&T) community, and hasten the transfer of new scientific and technological advances to the private sector for commercial development.

US/OTP plays an important role in developing and coordinating national technology policy, working in partnership with industry and the S&T community and serving as an advocate for policies that leverage the benefits of new technology and enhance the strength of the U.S. economy.

In working to achieve the performance goal, US/OTP's efforts are focused on general goals (measures) and objectives that will support and improve the U.S. innovation system, advance the role technology plays in U.S. economic growth and homeland security, and strengthen the competitive position of the Nation's technology industries.

FY 2005 Program Changes

Program Initiatives	Funding Request	FTE	Anticipated Impact	Location of Program Justification in the Budget Document
Digital Freedom Initiative	$129,000	-	Enhanced business competitiveness through the generation of information and services and the development of pro-growth regulatory and legal structures.	Salaries and Expenses Appropriation

Explanation of Performance Measures

General Goals (Measures) and Objectives

1. Support and improve the American innovation system.
    a. Strengthen the Federal technology transfer system.
    b. Identify and advocate policies that promote the competitiveness of the S&T workforce of the U.S.
2. Advance the role technology plays in U.S. economic growth and homeland security.
    a. Increase the understanding of policymakers and the public of the importance to the US economy and homeland security of emerging and advanced technologies.
    b. Identify and advocate strategies that facilitate technology-led economic growth.
3. Strengthen the competitive position of American technology industries.
    a. Increase U.S. policymakers' understanding of globalization's effects on competitiveness, technological development, and standards.
    b. Propose and recommend policy options on critical U.S. business climate issues.
    c. Promote recognition and adoption in other countries of policies and practices that support U.S. innovation and innovators.
4. Strengthen US/OTP's organization, capabilities, and resources to maximize the effectiveness of its activities and services.
    a. Transform US/OTP's internal organization and procedures to align with President's Management Agenda (PMA) objectives.

US/OTP has identified the following action plans, strategies, and activity milestones for FY 2004-2005 in each of the general goals (measures) and objectives. In addition to these programmatic goals, US/OTP identified an organizational and management goal that advances the organization's performance in keeping with the President's Management Agenda (PMA).

For each of US/OTP's goals and objectives, performance metrics rely chiefly on milestone accomplishments in achieving specific activities. The following action plan activities emphasize outreach, analysis and education, and advocacy--US/OTP's three key strengths--as strategies to accomplish its strategic goals and objectives.

Action Plans

To support its four strategic goals and associated objectives, US/OTP will pursue the following strategies, activities, and performance targets in FY 2004-2005.

General Goal #1: Support and improve the American innovation system.
Objective #1.a. Strengthen the Federal technology transfer system

Strategies	**Activities and Performance Targets**
• Facilitate inter-agency coordination of regulatory and legislative policy initiatives • Prepare and deliver reports on technology transfer practices and issues in response to Administration requests, congressional mandates, and emerging policy issues.	FY 2005: • Develop and publish legislatively mandated annual report to Congress and the President on U.S. government technology transfer activities and trends. • Publish and disseminate regulations clarifying Bayh-Dole policies to improve effectiveness of U.S. government technology transfer practices • Facilitate development of educational materials for use at the national laboratories, such as Web sites, online resources, and videos FY 2004: • Develop and publish legislatively mandated annual report to Congress and the President on U.S. government technology transfer activities and trends. • Publish and disseminate regulations clarifying Bayh-Dole policies to improve effectiveness of U.S. government technology transfer practices • Facilitate development of educational materials for use at the national laboratories, such as Web sites, online resources, and videos

Objective #1.b. Identify and advocate policies that promote the competitiveness of S&T workforce of the U.S.

Strategies	Activities and Performance Targets
• Prepare and deliver reports on innovation and technology issues in response to Administration requests, congressional mandates, and policy issues. • Regularly meet with industry leaders to identify excellence and best practices. Develop, publish, and disseminate the results as educational resources for policymakers and stakeholders.	FY 2005: • Manage the President's National Medal of Technology program to promote the economic value of technology innovation by providing public recognition to successful inventors. • Develop and promote S&T career-related Web content for GetTech Web site. FY 2004: • Manage the President's National Medal of Technology program to promote the economic value of technology innovation by providing public recognition to successful inventors. • Develop and promote S&T career-related Web content for GetTech Web site. • Provide public recognition to successful inventors.

General Goal #2: Advance the role technology plays in US economic growth and homeland security.

Objective #2.a. Increase the understanding of policymakers and the public of the importance to the U.S. economy and homeland security of emerging and advanced technologies.

Strategies	Activities and Performance Targets
• Prepare and deliver reports on emerging and advanced technology policy issues in response to Administration requests, Congressional mandates, and emerging needs. • Provide Administration and congressional policymakers with policy options concerning emerging and advanced technologies.	FY 2005: • Complete ongoing efforts with biotechnology industry to help develop U.S. government statistical data series • Analyze status and effects of U.S. government policies and investments related to critical emerging technologies • Promote understanding and use of productivity-enhancing information technologies in business, education, medicine, and research

• Serve as industry advocate within White House (WH), U.S. government and international policy for adoption of policies to strengthen U.S. innovation in emerging and advanced technologies. • Organize press briefings and roundtable discussions to inform Congress, U.S. government agencies, industries, S&T community, and public about OTP analytical findings. Disseminate information on the Web	FY 2004: • Work with biotechnology industry to help develop U.S. government statistical data series • Analyze status and effects of U.S. government policies and investments related to critical emerging technologies • Promote understanding and use of productivity-enhancing information technologies in business, education, medicine, and research

Objective #2.b. Identify and advocate strategies that facilitate technology-led economic growth.

Strategies	Activities and Performance Targets
• Prepare and deliver reports on strategies that facilitate technology-led economic growth • Develop outreach events to provide information and promote infrastructure contributing to technology-led economic growth	FY 2005: • Convene regional economic development officials, national experts, and other U.S. government/DOC interests to develop new OTP TLED initiatives and improve information dissemination to localities. • Continue information dissemination on successful programs/efforts in TLED abroad. • Complete analysis and disseminate results regarding current US digital opportunity efforts. • Consult with other U.S. government agencies and the private sector to coordinate international technology led economic development activities. FY 2004: • Convene regional economic development officials, national experts, and other U.S. government/DOC interests to develop new OTP TLED initiatives and improve information dissemination to localities. • Initiate data collection and begin information dissemination on successful programs/efforts in TLED abroad. • Analyze current U.S. digital opportunity efforts. • Consult with other U.S. government agencies and the private sector to coordinate international technology-led economic development activities.

General Goal #3: Strengthen the competitive position of American technology industries.

Objective #3.a. Increase U.S. policymakers' understanding of globalization's effects on competitiveness, technological development, and standards.

Strategies	Activities and Performance Targets
• Prepare and deliver reports on innovation and technology issues in response to Administration requests, Congressional mandates, and emerging needs. • Provide Administration and congressional policymakers with policy options concerning U.S. innovation issues.	FY 2005: • Convene quarterly discussions with industry and S&T community to evaluate progress on policy recommendations and to identify new policies. • Lead the Digital Freedom Initiative and coordinate with agency partners. • Engage 500,000 citizens and entrepreneurs in "host" countries in support of the Digital Freedom Initiative. • Catalyze and leverage U.S. private sector input and investment of approximately $10 million in the Digital Freedom Initiative. • Design and provide tools (software, applications) and resources (training, partnerships) aimed at promoting growth and productivity of entrepreneurs and subject matter experts in "host" countries. • Use U.S. technological and financial expertise to build greater efficiency into existing networks of microfinance and microcredit in "host" countries. • Promote pro-growth legal and regulatory frameworks in DFI "host" countries. • Facilitate partnerships in DFI countries that will lead to increased market opportunities for U.S. firms. • Develop partnerships with private sector and NGO participants. • Develop partnerships and programs for small businesses and entrepreneurs in host countries. FY 2004: • Develop and publish analytical report on the impact of globalization on U.S. innovation. • Develop and publish comparative analytical report on technology and innovation policy and programs in selected other countries. • Convene quarterly discussions with industry and S&T community to evaluate progress on policy recommendations and to identify new policies. • Organize and launch an outreach campaign to enlist a large and diverse group of partners to support the Digital Freedom Initiative. • Lead an effort to develop training materials and programs for small businesses and entrepreneurs in "host" countries.

Objective #3.b. Propose and recommend policy options on critical U.S. business climate issues.

Strategies	Activities and Performance Targets
• Liaison with technology industries to learn views on policy priorities. • Serve as industry advocate within White House, U.S. government and international policy fora to work for adoption of policies to strengthen U.S. innovation.	FY 2005: • Attend industry meetings and organize outreach events to learn views on policies including biotechnology, nanotechnology, broadband, information and communications technology. Use TA's position as APEC's Industrial Science and Technology Working Group Webmaster to improve utilization of information technology for information dissemination and activities related to international policy and project management. • Advise the Secretary of Commerce on technology issues based on ongoing analysis and consultations with industry and the S&T community. FY 2004: • Identify areas of improvement in R&D tax credit and develop policy papers/articles advocating adoption of credit with improvements. • Attend industry meetings and organize outreach events to learn views on policies including broadband, information and communications technology. Use TA's position as APEC's Industrial Science and Technology Working Group Webmaster to improve utilization of information technology for information dissemination and activities related to international policy and project management. • Advise the Secretary of Commerce on technology issues based on ongoing analysis and consultations with industry and the S&T community.

Objective #3.c. Promote recognition and adoption in other countries of policies and practices that support U.S. innovation and innovators.

Strategies	Activities and Performance Targets
• Represent the U.S. government in bilateral and multilateral meetings	FY 2005: • Continue to represent the U.S. in multilateral and bilateral meetings related to international technology policy FY 2004: • Continue to represent the U.S. in multilateral and bilateral meetings related to international technology policy

General Goal #4: Strengthen US/OTP's organization, capabilities, and resources to maximize the effectiveness of its activities and services.

Objective #4.a. Transform US/OTP's internal organization and procedures to align with the President's Management Agenda (PMA) objectives.

Strategies	Activities and Performance Targets
• Transform US/OTP's internal organization and procedures to align with PMA objectives	FY 2005: • Implement a new strategy regarding US/OTP's competitive sourcing efforts. • Continue implementation and refinment of US/OTP's workforce restructuring initiatives. • Continue to improve US/OTP's e-government participation through intragovernmental panels and through and improved web presence. FY 2004: • Convene advisory group to assess current efforts and recommend future activities/directions. • Implement Workforce Restructuring plan to realign the TA organization, strengthen workforce skills, and continue to deploy innovative human resources practices, such as flexitour, telework, and other flexibilities. • Improve US/OTP's e-government participation through interagency participation in panels and improved Web presence.

Program Evaluation

In FY 2004, US/OTP will develop a program evaluation process (see general goal 4) that involves convening an advisory group to assess current efforts and recommend future activities and directions with a focus on aligning US/OTP's internal organization and procedures with PMA objectives.

Cross-cutting Activities

Intra-Department of Commerce

US/OTP works with the National Institute of Standards and Technology, the National Oceanic and Atmospheric Administration, and the National Telecommunications and Information Administration on technology transfer issues; with the U.S. Patent and Trademark Office on intellectual property matters; with the National Telecommunications and Information Administration on telecommunications issues concerning technology innovation; with the Bureau of Industry and Security on technology export issues; and with the International Trade Administration on issues related to international technology.

Other government agencies
US/OTP works with the Departments of Education and Labor on workforce and education issues; the Department of State and the U.S. Trade Representative on international issues; the Department of State, USAID, Peace Corps, and US Freedom Corps for the Digital Freedom Initiative; the U.S. Patent and Trademark Office, the Bureau of Industry and Security, and a variety of agencies on technology transfer activities and on intellectual property rights issues; the Department of Health and Human Services, the National Institutes of Health, and the Food and Drug Administration on issues related to medical technologies; all the major Federal science and technology agencies on technology transfer issues; and the Office of Science and Technology Policy on international S&T issues.

Private sector
US/OTP works closely with private industry and the S&T community to develop and coordinate national technology policy. It also serves as an advocate for policies that best leverage the benefits of new technology and contribute to the U.S. economy.

External Factors and Mitigating Circumstances

Outputs associated with coordination and leadership functions depend in part upon the interest and commitment of numerous public and private sector participants operating at the state and Federal levels. US/OTP can influence but not control other participants.

Resource Requirements Summary

(Dollars in Millions. Funding amounts reflect total obligations.)
Information Technology (IT)
Full Time Equivalent (FTE)

NIST Laboratory Performance Goals (Goals 1-2):

1. **Provide technical leadership for the Nation's measurements and standards infrastructure**
2. **Assure the availability and efficient transfer of measurement and standards capabilities essential to established industries**

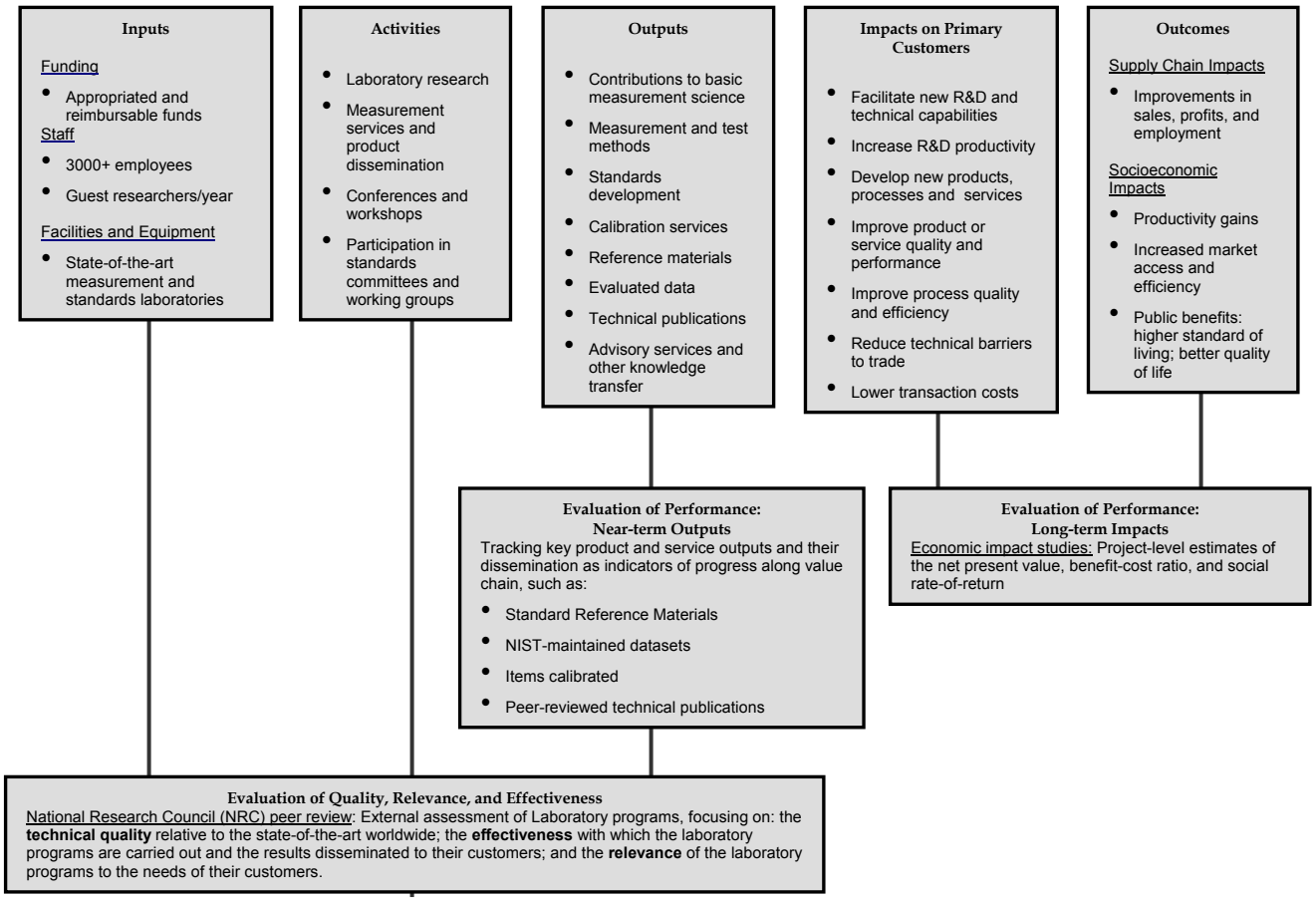
	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Estimate	FY 2005 Base	Increase/ Decrease	FY 2005 Estimate
NIST								
Scientific and Technical Research and Services								
Electronics & Electrical Engineering	38.6	40.6	41.5	44.4	45.0	44.3	9.1	53.4
Manufacturing Engineering	19.0	18.9	19.4	20.6	21.9	21.6	8.0	29.6
Chemical Science & Technology	33.2	34.3	34.3	38.5	42.2	43.4	5.4	48.8
Physics	29.8	32.8	34.5	35.9	37.8	38.6	2.7	41.3
Material Sciences & Engineering	51.9	54.0	56.0	60.1	53.9	54.6	8.3	62.9
Building & Fire Research	15.2	17.6	20.2	22.4	21.4	19.6	4.0	23.6
Computer Science & Applied Mathematics	46.5	55.6	56.4	52.9	49.8	51.0	7.0	58.0
Technology Assistance	17.8	17.8	18.1	18.6	15.2	15.6	2.0	17.6
Research Support Activities	26.2	29.0	44.5	59.7	54.8	45.2	29.0	74.2
Construction of Research Facilities	200.5	37.7	70.6	77.1	75.0	23.1	36.3	59.4
Working Capital Fund								
Direct / Investments	23.1	28.5	44.8	21.1	25.1	20.6	8.7	29.3
Reimbursable	110.7	115.5	125.7	144.8	159.4	140.5	0.0	140.5
Total Funding	612.5	482.3	566.0	596.1	601.5	518.1	120.5	638.6
IT Funding	50.2	54.2	64.0	66.0	63.4			67.3
FTE	2,670	2,594	2,607	2,639	2,691	2,603	203	2,806

Summary Information: NIST Performance Goals 1 & 2

The first two performance goals for NIST (below) pertain to the NIST Laboratory Program. The NIST Laboratories perform research to develop the measurement tools, data, and models for advanced science and technology. The model below depicts the NIST Laboratory Program's value-creation chain--from inputs like funding and staff to outcomes like productivity gains and improved quality of life. The model also includes the methods and measures used to evaluate quality, relevance, and performance along the impact path, each of which is described in more detail in the sections that follow.

NIST has designed its performance evaluation system to accommodate the organization's specific mission and impact path as well as to respond to the intrinsic difficulty of measuring the results of investments in science and technology. Like other Federal science organizations, the primary output of NIST's laboratory research is scientific and technical knowledge, which is inherently difficult to measure directly and comprehensively. In addition, the outcomes from research often do not begin to accrue until several years after the research program has been completed, and the diffusion of benefits often affects broad segments of industry and society over long time periods. Given these challenges, the NIST Laboratory Program evaluates its performance using an appropriate mix of specific output tracking plus cross-cutting peer review and economic impact analyses. Taken together, these evaluation tools, combined with continual feedback from customers, provide NIST management and external stakeholders with a detailed and broad view of NIST's performance toward its long-term goals.

NIST Laboratory Program: Impact and Evaluation Logic Model



Targets and Performance Summary

NIST Performance Goal 1: Provide technical leadership for the Nation's measurement and standards infrastructure

Measure	FY2000 Target	FY2000 Actual	FY2001 Target	FY2001 Actual	FY2002 Target	FY2002 Actual	FY2003 Target	FY2003 Actual	FY2004 Target	FY2005 Target
Qualitative assessment and review of technical quality and merit using peer review	Complete	Completed	Complete	Completed	Complete	Completed	Complete	Completed	Complete	Complete
Peer-reviewed technical publications	New	New	New	New	New	New	New	1267	1300	1300
Citation impact of NIST-authored publications	New	New	New	New	New	Above Average	New	Available Sept 2004	Above Average	Above Average

Corresponding Strategic Goal

Strategic Goal 2: Foster science and technological leadership by protecting intellectual property, enhancing technical standards, and advancing measurement science.

Rationale for Performance Goal

The NIST Laboratories perform research to develop state of the art measurement tools, data, and models for advanced science and technology. Through its broad and vigorous measurement research, NIST strives to anticipate the infrastructure needs of next-generation technologies in the United States. This forward-looking research not only yields improvements in NIST's measurement services, but also generates new knowledge, capabilities, and techniques that are transferred to industry, universities, and other government agencies.

NIST's current research portfolio focuses on laboratory-specific research competencies required to advance specific fields of measurement science and improve the efficiency of the system that links the fundamental units of measurement to the measurement methods used in applied settings. Over the long term, key forces in NIST's strategic environment—especially the interdisciplinary character of science and technology and the trend toward research networks—are directing the Institute's attention toward emerging technologies and research areas that are changing rapidly, require collaboration and coordination within NIST and between NIST and its external partners, and have the potential for very high economic and societal impacts.

Next-generation measurement needs lead NIST to focus its long-term research efforts on interdisciplinary areas where inadequate technical infrastructure is a barrier to development, commercialization, and public benefit, including nanoscale measurements and data, measurement and standards for the biosciences, and standards and test methods for information and communication technologies. NIST currently has a broad range of competencies to draw on in each area, but emerging measurement and standards needs require a higher level of strategic focus, internal and external collaboration, and organizational commitment. By focusing on these and related areas, NIST expects to increase its net impact on productivity, trade, and quality of life.

Explanation of Performance Measures

Qualitative assessment of technical quality, merit or relevance, and performance using peer review

Since 1959, the NIST Laboratories have been reviewed annually by the National Research Council (NRC). The annual NRC Board on Assessment of NIST Programs review is independent, technically sophisticated, and extensive. The Board consists of approximately 150 scientists and engineers, organized into seven panels (one for each of the seven NIST Laboratories) plus two sub-panels for specialized programs. Panel reviews are reported at the division level (the major organizational unit for the laboratories) and build upon assessments of research processes at the project and program levels.

Each year the lab-specific panels conduct a two to three-day on-site review of each laboratory's technical quality, paying particular attention to the following factors, as charged by the NIST Director:

- The technical merit / quality of the laboratory programs relative to the state-of-the-art worldwide
- The effectiveness with which the laboratory programs are carried out and the results disseminated to their customers
- The relevance of the laboratory programs to the needs of their customers
- The ability of the Laboratories' facilities, equipment, and human resources to enable the Laboratories to fulfill their mission and meet their customers' needs.

The NRC panel reports for each laboratory provide the basis for a comprehensive annual peer review report on the NIST Laboratories. As in prior years, the NRC report for FY 2003 provides each laboratory, and NIST as a whole, not only with an external quality assessment, but also with valuable information that it can use for its own performance assessment, planning, and management functions. The table on the following page provides summary statements for the laboratories, excerpted from NRC's 2003 report. The entire NRC report is available at http://www.nap.edu/catalog/10820.html.

Sample Statements from NRC Peer Review, FY 2003

LABORATORY	
Electronics and Electrical Engineering (EEEL)	"The work in EEEL continues to be of very high technical merit and quality. Many staff members are recognized as world leaders in their fields. In general, there is significant linkage between EEEL projects and the goals of the laboratory supporting NIST's mission… EEEL divisions are doing an excellent job of providing services, interacting with their customers, performing scientific research, and circulating the results of their investigations…The extended period of excessively lean budgets for the support of current laboratory activities now clearly has an influence on its present and future capabilities and effectiveness… Succession planning factored with strategic planning is critical to the future health and survivability of the [EEEL] divisions." (pp. 17, 20, 22).
Manufacturing Engineering (MEL)	"The [MEL] has a unique role to play in U.S. manufacturing through its expertise in measurements and standards… The quality of research in the [MEL] is high overall… In some areas, MEL work is state of the art relative to work being performed worldwide… MEL is working effectively to broaden its customer base and is establishing processes to identify best initiatives to help customers... A formal process and format should be established for planning and reporting project time lines and displaying a clear roadmap of current and planned activities, with a focus on continual process improvement." (pp. 28, 30).
Chemical Science and Technology (CSTL)	"CSTL's research and standards programs are technically excellent overall… CSTL has clearly demonstrated both the relevance and effectiveness of its programs to its customers, primarily U.S. industry, government, and academia, but also to international science, technology, and commerce… [CSTL's] innovative practices and successful partnering have sustained exceptional productivity and the continuation of its high visibility, recognition, and world leadership in the development of measurement standards… CSTL has implemented an excellent strategic planning process that is closely aligned with the goals and objectives of the overall NIST strategic plan…" (pp. 37-38).
Physics (PL)	"The NIST Physics Laboratory has long been known among its technical peers for the outstanding level of its scientific research. The laboratory has a tradition of world leadership in many of its areas of activity… continues to serve as a central, impartial presence in metrology and calibrations for commercial and scientific development... The Physics Laboratory continues to reach out through a variety of efforts to ensure that its programs are responsive to customer and national needs and that reliable experimental and theoretical information is maintained to support emerging technological and scientific directions…The Physics Laboratory must continue to develop a strategic plan and prioritization process that results in clear laboratory goals… "(pp. 45-46, 48).
Materials Science and Engineering (MSEL)	"The technical quality of MSEL continues at a very high level, as evidence by its quality contributions and impact on emerging science and technologies… The panel determined that [MSEL] is enhancing its relevance and effectiveness through reliance on its strategic plan for the allocation of limited resources to a growing set of national needs…The panel commends the laboratory for maintaining a balance between these new focus areas and continued service to its historical constituency groups… The panel noted in particular that the laboratory is making better use of collaborations both within and outside of NIST… Continued attention is needed… [on] the potential for subcritical staffing of important programs and the maintenance of key areas of investigation to secure the laboratory's role in the strategic mission of NIST. "(pp. 56-57, 60).
Building and Fire Research (BFRL)	"The panel continues to be impressed by the high quality of scientific and technical work produced in the [BFRL]… BFRL staff takes advantage of the special tools and expertise that exist in the laboratory to provide their customers with unbiased, technically excellent work focused on the measurement and testing needed to improve the quality of materials and technologies… The National Construction Safety Team Act presents a tremendous opportunity for BFRL. The laboratory still has to define a strategy for deploying resources to an investigation and, once completed, for disseminating the results… The laboratory has taken early steps toward the development of a strategic plan and of performance metrics. Next steps should include the specification of time lines, milestones, and interdependencies." (p. 64)
Information Technology (ITL)	"The overall technical quality and the merit, relevance, and effectiveness of the Information Technology Laboratory's programs and staff remain strong… There is ample evidence of outstanding work in leveraging technology ideas across customer areas for industry, academia, government, and within NIST…. ITL has worked hard and effectively to develop metrics for its performance. ITL should work with customers… to further develop means of assessing the effectiveness of ITL projects and products. ITL's interactions with and impact on industrial customers continue to be strong, and the panel applauds the laboratory's ability to produce and disseminate results of value to a broad audience." (pp. 74, 77)

Recently, NIST revised many of its annual output measures to focus more on the quality and demand for NIST research results and standards services. For example, NIST uses publications as one mechanism for disseminating the results of its research to the U.S. private sector, universities, and other government agencies. Previously, NIST reported only the total level of publications. This measure has been improved in two respects: 1) NIST now provides the number of peer-reviewed technical publications (which serves as a partial indicator of quality); and 2) NIST will regularly report the citation impact of NIST-authored publications (which provides a partial indicator of quality and utility).

Peer-reviewed technical publications

Technical publications represent one of the major mechanisms NIST uses to transfer the results of its research to those organizations that need cutting-edge measurements and standards. Each year, NIST's technical staff produces a total of 2,000 to 2,200 publications with approximately 60 percent appearing in prestigious scientific peer-reviewed journals. This measure represents the annual number of high quality, peer-reviewed technical publications produced by the NIST Laboratories staff. The number is a direct count of the peer-reviewed technical publications approved by the NIST Editorial Review Board at both the Gaithersburg, and Boulder sites.

In addition to peer-reviewed journals, NIST publishes its measurement methods and standards through conference proceedings, NIST interagency reports and special publications. For example, the NIST Journal of Research highlights NIST's research and development in the area of metrology and related fields of physical science, engineering, applied mathematics, statistics, biotechnology, and information technology. Also, special publications such as NIST Recommended Practice Guides target specific industries and provide users with valuable guidance on specialized measurement techniques and methods for interpreting results.

Citation impact of NIST-authored publications

Within the scientific community, citation rates are often used to measure the demand for or relevance of published research. Citation analysis also provides an independent and objective validation of peer review findings as research has shown that high citation rates - the cumulative number of citations per publication - correlate with peer review judgment in terms of scientific quality and relevance. Citation rates, when combined with other metrics such as publication counts, provide a useful measure of the utility and relevance of an organization's research.

NIST assesses its citation impact by using data collected by the Institute for Scientific Information (ISI), which has been collecting research publication data for more than 40 years and now maintains one of the most comprehensive sources of available publication data for scientific and technical organizations. This measure represents NIST's "relative citation impact" - that is, the average citation rate per NIST publication relative to ISI's baseline citation rate number for all scientific and technical organizations. According to the ISI database, NIST's relative impact for the past 22 years (1981-2002) has been consistently above average. These data demonstrate that NIST consistently produces relevant scientific and technical publications.

NIST Performance Goal 2: Assure the availability and efficient transfer of measurement and standards capabilities essential to established industries

Measure	FY2000 Target	FY2000 Actual	FY2001 Target	FY2001 Actual	FY2002 Target	FY2002 Actual	FY2003 Target	FY2003 Actual	FY2004 Target	FY2005 Target
Standard Reference Materials sold	New	34,020	New	31,985	New	30,996	New	29,527	29,500	29,500
NIST-maintained datasets downloaded	New	New	New	New	New	New	New	55,653,972	56,000,000	56,000,000
Number of items calibrated	3,200	2,929	3,100	3,192	2,900	2,924	2,900	3,194	2,800	2,700
Economic impact studies	Complete	Completed	Complete	Completed	Complete	Completed	Complete	No studies conducted	Complete	Complete

Corresponding Strategic Goal

Strategic Goal 2: Foster science and technological leadership by protecting intellectual property, enhancing technical standards, and advancing measurement science.

Rationale for this Performance Goal

A major component of the Commerce Department's mission is to promote U.S. competitiveness by strengthening and safeguarding the U.S. economic infrastructure. The economy and measurement infrastructure depend on accurate measurements and direct traceability to international standards. Measurement equivalency among international, national, and local laboratories is critical for the acceptance of test results for commerce, international trade, and health and safety.

As the U.S. National Metrology Institute, NIST is charged with maintaining the national measurement and standards system and providing high-accuracy primary measurement services to anchor the Nation's industrial enterprise to international primary standards. U.S. industry requires a high quality measurement infrastructure for product development, testing, instrumentation, process monitoring, and product performance enhancement. NIST's measurement services provide a common infrastructure for measurement functions in existing industries, allowing customers to verify and gain domestic and international acceptance of their measurement results by tracing them back to the primary national and international standards.

Today's global marketplace demands rapidly conducted, highly accurate, and efficiently delivered measurements. In technology-based industries, NIST continuously responds to quality and cost pressures that call for more measurements with increasingly high precision and selectivity. These industries can be extremely measurement-intensive; for instance, measurements account for 25-30 percent of manufacturing costs in the semiconductor industry. For these and other customers, NIST measurement services—reference materials, evaluated data, calibrations,

measurement methods, and others—are critical for ensuring product performance and quality, improving production processes, making marketplace transactions fair and efficient, and leveling the playing field for international trade.

Measurement services for the United States originate at NIST and derive directly from NIST laboratory research efforts. Through measurement standards, data, and technical services, NIST provides its customers in industry, government, and the scientific community with measurement uniformity, traceability, and equity in domestic and international commerce.

Explanation of Performance Measures

While NIST has diverse measurement and standards outputs, Standard Reference Materials (SRMs), NIST-maintained data, and calibrations represent three channels through which NIST delivers measurement and standards tools and services to established industries. Per discussions with OMB during their FY 2005 Program Assessment Rating Tool (PART) review, NIST revised these metrics to more accurately capture the demand for its products and services. Previously, NIST reported only the number of SRMs and reference data sets available, in addition to the number of items calibrated. Combined with the number of items calibrated, the new measures - SRMs sold and downloads of NIST-maintained data– provide better indicators of industry's demand for and use of NIST measurements and standards.

Standard Reference Materials (SRMs) Sold

SRMs are certified in the NIST Laboratories for their specific chemical and material properties. SRMs are the definitive source of measurement traceability in the United States; all measurements using SRMs can be traced to a common and recognized set of basic standards that provides the basis for compatibility of measurements among different laboratories. In addition, as economic exchange has become more global, customers are using SRMs to achieve measurement quality and conformance to process requirements that address both national and international needs for commerce and trade. NIST has developed over 1350 SRMs supporting areas such as industrial materials production and analysis, environmental analysis, health measurements, and measurements for basic science. This measure represents a direct count of the number of SRM units sold to customers in industry, academia, and other government agencies. Recent trends illustrate dissemination of a high (roughly 30,000 per year) but slightly declining number of SRMs. NIST expects this trend to continue predominantly because technological improvements in equipment and testing methods will continue to reduce the overall frequency with which test equipment and methods are calibrated using reference materials.

NIST is committed to responding to its customer's SRM needs and has recently implemented improvements in its internal reporting system to assist the individual NIST laboratories in efficiently managing SRM inventories and tracking specific SRM sales. In addition, NIST has developed other avenues of dissemination to ensure its customers have access to the reference materials they need. For example, as a result of increasingly sophisticated Federal, state, and local environmental standards, NIST experienced a significant increase in the demand for its gas-mixture reference standards. In response to this growing demand, NIST partnered with the EPA and specialty gas companies (SGCs) to allow the SGCs to manufacture and disseminate reference standards with defined traceability linkages to the existing NIST standard. The result - the NIST Traceable Reference Materials (NTRM) for Gas Standards – is an innovative program benefiting U.S. industry and consumers. Additional information, including the economic impact of the NTRM program, is available in a NIST Planning Report available at http://www.nist.gov/director/prog-ofc/report02-4.pdf.

Downloads of NIST-maintained Datasets

NIST provides on-line access to over 70 scientific and technical databases. These databases cover a broad range of substances and properties from a variety of scientific disciplines. Some datasets - such as the NIST Chemistry WebBook, NIST Physical Reference Data Systems, and the NIST Ceramics WebBook - are comprehensive and contain a large number of databases, while others serve very specific applications. NIST's on-line data systems are heavily used by industry, academia, other Government agencies, and the general public and represent another method NIST uses to deliver its measurements and standards tools, data, and information. This measure is a direct count of the average annual number of downloads of NIST-maintained data. While this count demonstrates a very high level of data dissemination, it does not capture the distinct number of users that have accessed the databases. (NIST cannot and does not collect user-specific data on web transactions). Overtime, NIST expects a consistent level of on-line data dissemination.

Number of items Calibrated

NIST offers more than 500 different types of physical calibrations in areas as diverse as radiance temperature, surface finish characterization, and impedance. NIST calibration services and special tests are characterizations of particular instruments, devices, and sets of standards with respect to international and national standards. NIST calibration services provide the customer with direct traceability to national and international primary standards. This measure illustrates the quantity of physical measurement services provided by NIST for its customers, including calibration services, special tests, and Measurement Assurance Programs (MAPs). MAPs are quality control programs for calibrating entire measurement systems.

The output data represent a direct count of the number of items external customers sent to NIST for formal calibration services. The data provide information on service output levels only and represent a measure of throughput but not workload per se, as the number of tests and/or the time and calibration effort required can vary substantially across items. As with SRMs and NIST-maintained data, downstream impact is a function of the nature of individual calibration services more than the sheer volume of items calibrated.

NIST expects a relatively high but slightly declining number of items calibrated, for two reasons: First, extended calibration cycles as well as changing technology and industry mergers continue to reduce the number of artifacts delivered to NIST for calibration; and second, NIST focuses on conducting calibrations that require a direct connection to the national standards, and on improving calibration accuracy in areas where new industry demands are emerging. Through this overall approach NIST can efficiently leverage its primary calibration services to support a broader base of secondary calibrations conducted within the private sector.

Economic Impact Studies

NIST uses retrospective microeconomic studies to complement the quantitative output measures and assess the long-term impacts that derive from specific NIST Laboratories' programs or projects. NIST has been conducting economic impact studies on a regular basis since 1992, and initiates two to four new impact studies annually. Impact assessments of NIST's R&D in specific technical areas are conducted by external economic and technical experts contracted by NIST. These studies provide both quantitative estimates and qualitative assessments of the economic impacts resulting from the different types of technology infrastructure that NIST provides to U.S. industry. Quantitative estimates compare project costs with quantitative impact evidence in such areas as productivity, quality, time-to-market, transaction costs, sales, market share, and profits.

NIST impact studies use the same quantitative metrics as industry, typically providing one or more of three metrics: 1) net present value and two efficiency measures; 2) a benefit-cost ratio, which compares the net present value of benefits and costs over the time period being analyzed; and 3) a social (internal) rate of return, which represents the annual percentage rate that would be required to reduce the net present value of the benefit time series to zero (i.e., to yield a benefit-cost ratio of one—the break-even point for a project). Recent impact studies also provide qualitative descriptions of impacts that are significant but difficult to quantify, such as the impact of NIST infratechnologies on R&D strategies and capabilities, organizational efficiency, market access, and effectiveness in working with external actors such as suppliers and standards organizations. A study conducted by the National Bureau of Economic Research indicated that NIST outputs generate rates of return on R&D that consistently exceed the estimated average returns on R&D conducted by private industry.

Economic Impact Studies: Long-term Outcomes of NIST Laboratory Research

Industry: Project	Year	Output	Outcomes	Measures*
Chemicals: gas-mixture reference standards	2002	NIST-traceable reference materials	Lower regulatory compliance costs; improve market efficiency	SRR: 221-228%; BCR: 21-27; NPV: $49M to $63M
Communications: security (role-based access control)	2002	Generic technology reference models and security standards	Enable new markets; increase R&D efficiency	SRR: 62%; BCR: 109; NPV: $292M
Electronics: Josephson voltage standard	2001	Standard reference materials	Increase R&D efficiency; increase productivity; enable new markets	SRR: 877; BCR: 5; NPV: $18M
Communications: security (data encryption standards)	2001	Standard conformance test methods/services	Increase R&D efficiency; enable new markets	SRR: 267-272%; BCR: 58-145; NPV: $345M-$1.2B
Pharmaceuticals: cholesterol measurement	2000	Standard reference materials	Increase productivity; decrease transaction costs	SRR: 154%; BCR: 4.5; NPV: $3.5M
Photonics: laser and fiberoptic power and energy calibration	2000	Calibrations	Increase productivity; decrease transaction costs	SRR: 43%-136%; BCR: 3-11; NPV: $48M
Chemicals: SRMs for sulfur in fossil fuels	2000	Standard reference materials	Increase productivity; reduce transaction costs	SRR: 1,056%; BCR: 113; NPV: $409M
Semiconductors: software for design automation (IGBT semiconductors)	1999	Software model	Increase R&D efficiency; increase productivity	SRR: 76%; BCR: 23; NPV: $10M
Chemicals: alternative refrigerants	1998	Standard reference data	Increase R&D efficiency; increase productivity	SRR: 433%; BCR: 4
Materials: phase equilibria for advanced ceramics	1998	Standard reference data	Increase R&D efficiency; increase productivity	SRR: 33%; BCR: 10
Materials: thermocouples	1997	Standard reference data (calibration)	Lower transaction costs; increase product quality	SRR: 32%; BCR: 3
Pharmaceuticals: radiopharmaceuticals	1997	Standard reference materials	Increase product quality	SRR: 138%; BCR: 97
Photonics: optical detector calibration	1997	Standards and calibration services	Increase productivity	SRR: 72%; BCR: 3

*The benefit-cost ratio compares the net present value of benefits and costs over the time period being analyzed. Social (internal) rate of return represents the annual percentage rate that would be required to reduce the net present value of the benefit time series to zero (i.e., to yield a benefit-cost ratio of one—the break-even point for a project).

Collectively, these studies validate NIST's fundamental impact logic model: in other words, they prove that the measurement and standards infrastructure provided by NIST generates impacts on R&D productivity, market efficiency, product quality, and other factors—typically at a level that far exceeds the input costs. Individually, these studies also provide management with a broader range of useful qualitative information on such important factors as the nature of the R&D life cycle in individual industries; the points at which measurement technologies affect R&D, production, and market transactions at different levels of the supply chain; and the modes of potential impact associated with different types of NIST infratechnologies.

FY 2005 Program Changes for the NIST Laboratory Program (Goals 1 & 2)

Through its broad and vigorous measurement research, NIST works to anticipate the infrastructure needs of next-generation technologies and industries in the U.S. This forward-looking research not only yields improvements in NIST's measurement services but also generates new knowledge, capabilities, and techniques that are transferred to industry, universities, and government. Next generation measurement needs require NIST to focus research efforts in specific technology areas where inadequate technical infrastructure is a barrier to development, commercialization, and public benefit. Through its strategic planning processes, NIST has determined the areas that offer the greatest potential for long-term impact on productivity, trade, and quality of life and support NIST's role as the leader of the Nation's measurement and standards infrastructure.

The FY 2005 program initiatives for the NIST Laboratory Program reflect the challenges facing the Nation's technical infrastructure and the competencies required to meet those challenges. These program initiatives illustrate specific research areas NIST will develop. The overall goals, outputs, and outcomes of each of these research areas are specifically defined in the detailed program justifications. While these research programs link directly to the overall goals of the NIST Laboratory Programs, progress and performance are measured at the individual project level.

Program Initiatives	Funding Request	FTE	Anticipated Impact	Location of Program Justification in the Budget Document
Advances in Manufacturing	$15,600,000	32	Nanotechnology Research and National Nanofabrication and Nanometrology User Facility: Improved capabilities and efficiencies in nanotechnology infrastructure supporting numerous industry sectors. Nanotechnology for Electronics and Semiconductor Industries: Increased productivity in the manufacture of nanostructures and nanodevices resulting in a strong global competitive position of the U.S. electronics and semiconductor industries. Health Care Technologies: Improved technical infrastructure to support biotechnology research and facilitate the discovery of new products and services for health care, environmental remediation, and the chemical and defense industries. Standards and International Trade: Increased competitiveness and improved market access for U.S. businesses and the incorporation of U.S. technologies into key international standards.	Measurement and engineering research and standards activity

Advances in Measurement Sciences, Standards, and Services Program	$16,225,000	26	Building Competence for Advanced Measurements**:** Development of state-of-the-art metrology supporting both mature and emerging industry sectors. Biosciences: Reduced and eliminated technical barriers to trade and improved market access for medical devices and agricultural products. Quantum Information Science: Improved security for electronic commerce and critical National security systems. Time Scale and Time Dissemination Services: Reliable time services necessary for National critical infrastructures including, emergency communications, financial services, and navigation, and to develop in parallel, an improved infrastructure for distributing the more accurate time that civilian and defense applications will require in the near future.	Measurement and engineering research and standards activity
Measurements and Standards for Public Safety and Security	18,586,000	51	Standards, Technology, and Practices for Buildings and Emergency Responders: Enhanced safety and reduced risk for building occupants. Improved emergency response and mobility. Measurement Infrastructure for Homeland Security: Enhanced homeland security and reduced vulnerabilities through improvements in the detection of chemical, biological, nuclear, radiation and explosive systems. Standards for Biometric Identification: Strengthened homeland security through the positive identification of terrorists. Cybersecurity: Improved efficiencies, effectiveness, and security of the Nation's critical networks and sensitive government information systems.	Measurement and engineering research and standards activity
National Neutron Research Capability Improvements	$8,300,000	12	Development of improved metallic components essential to transportation, energy, aerospace, and other industry sectors. Advanced design and development of new lightweight, high-strength composite materials for next generation automobiles and aircrafts. Development of advanced measurements and imaging of fuel cells in support of alternative, clean, efficient power devices. Improved systems for chemical production and separation through the development of tailored molecular architectures.	Measurement and engineering research and standards activity, Materials Science and Engineering subactivity

Equipping the AML	$25,500,000	--	Measurement support for the next generation of semiconductor devices; the development of new materials supporting various applications through the new characterization of advanced materials, chemical interactions, and impurities at the nanoscale.	Measurement and engineering research and standards activity, Research support subactivity
Facilities Technical Modernization	$25,700,000	--	Improvements in the infrastructure necessary for accurate measurement work fostering technological innovation and enabling new generations of science, technology, and competitive products. Improvements, renovations, and relocation will also result in energy efficiencies, improved personnel safety, and cost savings.	Construction and Major Renovations Activity
Safety, capacity, maintenance, and major repairs (SCMMR)	$10,572,000	1	Improvements in the infrastructure necessary for accurate measurement work fostering technological innovation and enabling new generations of science, technology, and competitive products.	Construction and major renovations activity, Modifications and improvement subactivity

External Program Evaluation

Visiting Committee on Advanced Technology

The programmatic goals and management policies of NIST as a whole, including each of its major programs, are reviewed regularly by the Visiting Committee on Advanced Technology (VCAT). The VCAT is a legislatively mandated panel of external advisors that meets quarterly to review NIST's general policy, organization, budget, and programs. Please refer to the text box for the current list of VCAT members; see also: http://www.nist.gov/director/vcat/index.htm for additional information on the VCAT, including its most recent annual report. NIST's overall approach to performance measurement consists of three distinct evaluation mechanisms: peer review and other forms of external assessment, economic impact studies, and quantitative output tracking. NIST uses these three evaluation mechanisms as a system that, combined with quarterly VCAT reviews, provides a comprehensive approach to results-based management over time.

NIST Visiting Committee on Advanced Technology (VCAT):
Current Membership – 2003

Mr. Gary Floss, Business Partner
Bluefire Partners

Dr. Richard M. Gross, Vice President
Research & Development, The Dow Chemical Company

Dr. Deborah L. Grubbe, Corporate Director, Safety & Health
DuPont Safety, Health, Environment

Dr. Lloyd R. Harriott, Professor
Dept. of Electrical and Computer Engineering, University of Virginia

Dr. Lou Ann Heimbrook, Vice President
Global Operations, Merck Research Laboratories

Dr. Jennie Hunter-Cevera, President
University of Maryland Biotechnology Institute

Dr. Thomas A. Manuel, President
Council for Chemical Research

Dr. Wayne H. Pitcher, Jr.
Technology Management Consultant

Dr. F. Raymond Salemme, Founder, President, and Chief Scientific Officer
3-Dimensional Pharmaceuticals, Inc.

Dr. Juan M. Sanchez, VCAT Chair, Vice President for Research
University of Texas, Austin

Dr. April M. Schweighart, Product Business Manager
Motorola

Program Assessment Rating Tool
For the FY 2005 budget cycle, the NIST Laboratory Programs were assessed using OMB's Program Assessment Rating Tool (PART). OMB's evaluation of the NIST Laboratory Programs was positive, with an overall rating of "effective" (only 6 percent of programs assessed during the FY 2004 budget cycle received this rating). Through the PART assessment, OMB highlighted the following:

- The NIST Laboratory Programs have a clear, well-defined, and unique purpose. The measurement and standards capabilities provided by the NIST Laboratory Programs are a critical component of the Nation's scientific, technical, and economic infrastructure.

- The NIST Laboratory Programs are well-managed with strong strategic planning, program management, and performance evaluation processes. NIST's external advisory committees and peer review system are a particularly strong component of its management and evaluation system.

- During the course of the PART review, OMB encouraged NIST to revise its long-term goals and improve some of its quantitative output metrics. NIST made a number of corresponding revisions in time for the new goals and metrics to appear in this integrated budget submission and performance plan for FY 2005.

Responses to OMB recommendations related to long-term goals and quantitative output metrics have been incorporated into this budget submission and performance plan. NIST will continue to work with OMB, as requested, to continuously improve its performance measures and specifically to identify useful measures of efficiency (OMB recognizes that R&D-performing organizations typically cannot provide unit cost measures of efficiency due to the long time frame for research, multivariate inputs, and diverse sets of outputs that derive from R&D activities).

Crosscutting Activities

Intra-Department of Commerce
The NIST Laboratories work with other Department of Commerce bureaus, including NOAA, NTIA, and ITA on issues of joint interest to the Department, Administration, and Congress. For example, NIST works with NOAA on the Federal Natural Disaster Reduction Initiative, which is focused on reducing the costs of natural disasters and saving lives through improved warnings and forecasts and information dissemination. Also, NIST and NOAA are among a group of Federal agencies focused on the global climate change initiative to accelerate new global observation technologies to improve the understanding of global climate change. NIST and NTIA cooperate to support development of ultrawideband signal technology, a new wireless technology that will improve communications for emergency services and other applications. The Advances in Manufacturing initiative included in this budget request provides an opportunity for NIST to collaborate with ITA in the areas of international standards.

Other government agencies
NIST provides research and services in measurement and standards to almost every other agency in the Federal government with scientific missions contracted through specific Interagency Agreements or memoranda of understanding. NIST measurement research, services, and

facilities have long contributed to national defense and security, to the nationwide safety and quality assurance systems that ensure the accuracy of health care measurements, to the accuracy of environmental measurements, and to law enforcement standards. NIST plays a large role in a wide variety of intragovernmental and government–industry coordination committees. For example, NIST has leadership positions on the committees, subcommittees, and working groups of the National Science and Technology Council (NSTC).

Private sector

NIST's mission is to work with industry to develop and apply technology, measurements, and standards. As such, the NIST Laboratories have extensive and diverse interactions with industry, which provide an important source of information about the quality, direction, and future demand for NIST products and services. Many of the laboratories' primary outputs, such as Standard Reference Materials and calibration services, are critically important to the quality and cost efficiency of products and production processes throughout U.S. industry. In addition, the NIST staff use technical publications, conferences, and workshops as mechanisms to transfer the results of their work to the U.S. private sector that need cutting-edge measurements and standards.

External Factors and Mitigating Circumstances

Industry-specific business conditions and technological developments affect the level and range of demand for NIST products and services over time. For instance, annual demand for calibrations—only one of numerous outputs of the NIST Laboratories—can fluctuate due to several factors outside NIST's control, including changes in the calibration intervals of large customers, changes in the average calibration interval rate in any given year, consolidation of calibration activities within large R&D organizations, and industry consolidation (as, for example, in defense-related industries). In general, NIST seeks to mitigate the effects of external technological and market uncertainties by maintaining varied and close relationships with its customer base. Through conferences, workshops, technology roadmaps, and many other forms of interaction with its customers, NIST regularly evaluates and adjusts to the direction and level of demand for measurements, standards, reference data, test methods, and related infrastructural technologies and services.

Resource Requirements Summary

(Dollars in Millions. Funding amounts reflect total obligations.)
Information Technology (IT)
Full Time Equivalent (FTE)

ATP Performance Goal: Accelerate private investment in and development of high-risk, broad-impact technologies

	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Estimate	FY 2005 Base	Increase/ Decrease	FY 2005 Estimate
NIST								
Industrial Technology Services								
Advanced Technology Program	198.3	175.4	197.8	199.4	193.4	177.4	-177.4	0.0
Working Capital Fund	0.5	0.4	0.3	0.3	0.3	0.0	0.0	0.0
Total Funding	198.8	175.8	198.1	199.7	193.7	177.4	-177.4	0.0
IT Funding	5.8	4.0	5.0	5.3	5.1			0.0
FTE	270	239	249	247	207	247	-247	0

Targets and Performance Summary

NIST Performance Goal 3: Accelerate private investment in and development of high-risk, broad-impact technologies[1]

Measure	FY 2000 Target	FY 2000 Actual	FY 2001 Target	FY 2001 Actual	FY 2002 Target	FY 2002 Actual	FY 2003 Target	FY2003 Actual	FY 2004 Target	FY 2005 Target
Cumulative number of publications	680	565	720	747	770	969	840	Available May 2004	990	1090
Cumulative number of patents	770	693	790	800	930	939	1,020	Available May 2004	1,220	1310
Cumulative number of technologies under commercialization	170	166	180	195	190	244	210	Available May 2004	250	270

[1]Due to the cumulative nature of ATP's performance measures, there is a 3-5 year lag from initial project funding to the generation of measurable outputs and outcomes; performance data will continue to cumulate through the next several fiscal years before reflecting the budgetary changes proposed for FY 2005.

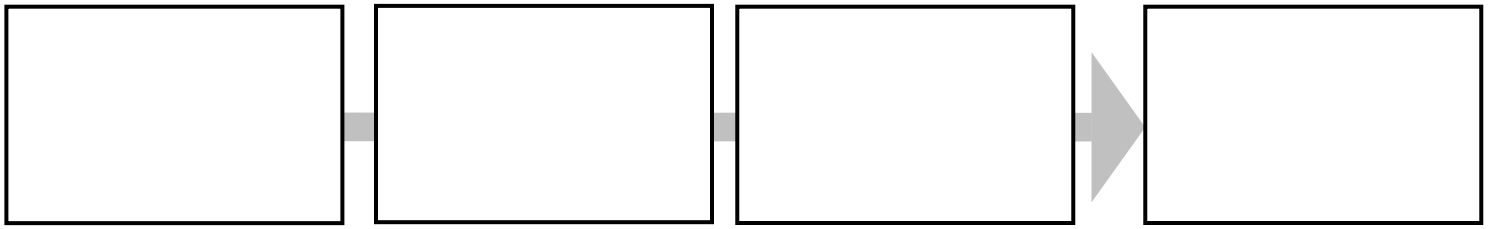
Corresponding Strategic Goal

Strategic Goal 2: Foster science and technological leadership by protecting intellectual property, enhancing technical standards and advancing measurement science.

Rationale for Performance Goal

The Advanced Technology Program (ATP) is designed to encourage industry to identify and invest resources in high-risk, broad impact technologies—technologies with significant economic and societal promise, but with inadequate levels of private investment. The Program is structured to generate broad-based economic benefits by stimulating industry-led partnerships to develop new technologies. The ATP uses joint ventures, subcontracts, and informal teaming arrangements to combine private investment and the best available scientific and technological talent in industry, universities, and government.

The "impact path" for the ATP–-from inputs like appropriated funds and industry matching funds to long-term economic benefits–is illustrated below.



From the start of the program, evaluation has been a central part of ATP operations, as a management tool to provide feedback to project selection and program operations and to demonstrate program results to stakeholders and the public.

The ATP has developed a multi-component evaluation strategy to provide measures of progress and performance at various stages of its impact path: for the short-term, from the time of project selection and over the course of the ATP-funding period (inputs and initial outputs); for the mid-term, as commercial applications are pursued, early products reach the market, and dissemination of knowledge created in the R&D projects occurs (outcomes); and for the longer-term, as more fully-developed technologies diffuse across multiple products and industries, with related net impacts on formation of new industries, job creation, and U.S. economic growth (impacts).

Explanation of Performance Measures

In the early and mid stages of project evolution, ATP tracks key outputs from projects through its Business Reporting System, a unique internal database created in 1993, which draws data from regular, systematic electronic project surveys and supplementary telephone surveys. Key indicators used to represent the generation and diffusion of new commercially relevant technical knowledge are patents and technical publications generated by ATP-funded projects. Taken together, these two indicators illustrate the generation and diffusion of technical knowledge created by ATP-funded R&D partnerships.

Cumulative Number of Publications

The cumulative count of publications generated by all ATP-funded research through the close of a given fiscal year represents a major channel for the diffusion of technical knowledge that results from ATP funding. Projections are based on extrapolations of past publication rates and projections of projects initiated and completed over time and are updated to reflect all currently available data. These targeting mechanisms are not perfectly accurate for several reasons. The publications data are impacted by delays in ATP project completion and/or project terminations, both of which are difficult to predict years in advance. In addition, publication rates vary significantly across technology areas. As a result, publications activity will be affected by changes in ATP's completed project portfolio. While these factors and others make perfectly accurate targeting difficult, ATP will continue to track its publications count closely, and also will analyze any trends that may indicate necessary adjustments to its projection models.

Cumulative Number of Patents

The second of ATP's output measures represents a cumulative direct count of the number of patents filed by all ATP-funded research project participants through the close of a given fiscal year. Projections are based on extrapolations of past patenting rates and projections of projects initiated and completed over time, and are updated to reflect all currently available data. These targeting mechanisms are not perfectly accurate for several reasons. First, the patenting process is difficult to predict, and thus, for example, it is possible that patents projected to materialize in one fiscal year might not occur (or be reported) until the following year. Second, the patenting data are impacted by delays in ATP project completion and/or project terminations, both of which are difficult to predict years in advance. In addition, the proclivity to patent varies significantly across technology areas and markets, due in part to differences in the utility and role of intellectual property protection. For example, biotechnology-focused projects may generate more patents than projects of an equivalent size in the IT or manufacturing sectors. As a result, patent activity (like

publications) will rise or fall as ATP's completed project portfolio shifts to a different mix of projects. While these factors and others make perfectly accurate targeting difficult, ATP will continue to track its patent count closely, and also will analyze any trends that may indicate necessary adjustments to its projection models.

Technologies Under Commercialization

In addition to tracking patents and technical publications, ATP's Business Reporting System also tracks mid-course outcomes of ATP-funded technology development projects up through six years after ATP funding ends. A key indicator is the number of technologies under commercialization. This metric tabulates the cumulative number of new technologies under commercialization that are traceable to all ATP funded projects through the close of a given fiscal year. The measure indicates the extent to which ATP-funded research and development has either leveraged or catalyzed new products and services, which in turn improve the prospects for technology-led economic growth. NIST uses this metric in combination with patent and publication data to assess ATP's impact on the generation and diffusion of new commercially relevant technologies and technical knowledge. Out-year projections are based on extrapolations of past commercialization rates and projections of projects initiated and completed.

Commercialization is broadly defined as any group of activities undertaken to bring products, services, and processes into commercial applications, including development of commercial prototypes, adoption of processes for in-house production, development of spin-off products and processes, and the sale and licensing of products and services derived from the technology base created by the ATP-funded project.

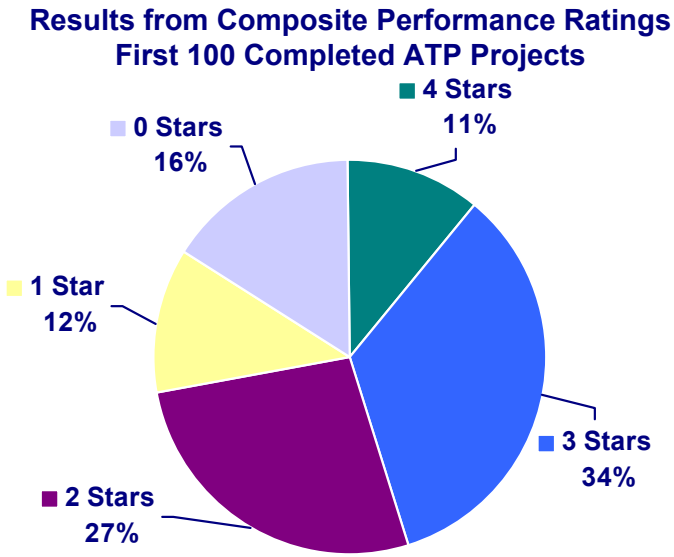
Program Evaluation

To provide a more comprehensive measure of mid-term outcomes from ATP funding, the program implemented a Composite Performance Rating System and has compiled and published ratings of the first fifty completed ATP projects. Under the Composite Performance Rating System, each project is scored on a set of measures of knowledge creation and dissemination and progress toward commercial goals; these are summarized in the table below.

ATP's Composite Performance Rating System: Component measures of rating

Knowledge Creation and Dissemination Measures	Commercialization Progress Measures
▪ Technical awards ▪ Collaborations ▪ Patent filings ▪ Publications and presentations ▪ New product/process in market or expected soon	▪ New product/process in market or expected soon ▪ Attraction of capital ▪ Employment gains ▪ Business awards ▪ Outlook

The results from all these measures are used to construct a composite performance score to indicate the overall project effectiveness against ATP's mission (measured two to three years after the end of ATP funding). The result is a four-star system of ratings, with scores ranging from zero to four stars. The results of this analysis for the first 100 completed ATP projects found that 11 percent of the projects are top-rated in terms of overall project performance, with four stars. Twenty-eight percent are in the bottom group of zero or one stars. Sixty-one percent make up the middle group.



Not all ATP projects are fully successful. Given the program's emphasis on funding high-risk, technology development that the private sector is unwilling and unable to fund alone, but which have the potential to result in broad-based benefits for the U.S. economy, dictates that most projects will fail to accomplish all their goals. Some projects are stopped before completion of the funding period. Others fail to meet all their technical goals, or encounter business difficulties before the technologies are commercialized.

Measuring Impacts

Fully successful ATP projects are expected to contribute significantly to the U.S. scientific and technical knowledge base, yield private benefits to the innovators, and ultimately yield benefits to others in the United States through market, knowledge, and/or network spillovers. The measurement of long-term economic outcomes requires well-established projects with technological outputs that have been in the market for long time periods. To measure long-term economic impacts that derive from the set of funded ATP projects, the program conducts or contracts detailed and rigorous case studies. Where possible, these studies also estimate long-term project outcomes. For instance, one recent prospective study of an ATP-funded joint R&D venture for digital mammography estimates a social rate of return of at least 69 percent and a benefit-to cost ratio of at least 125:1. Forthcoming studies include an evaluation of the economic benefits from a portfolio of projects in component-based software.

External Program Evaluation

Visiting Committee on Advanced Technology

To supplement its comprehensive internal evaluation methods, the ATP also receives external review and evaluation. The programmatic objectives and management of ATP are reviewed regularly by the Visiting Committee on Advanced Technology (VCAT), a legislatively mandated panel of advisors that meets quarterly to review NIST's general policy organization, budget, and programs, and by the Advanced Technology Program Advisory Committee. The ATP Advisory Committee is charged with (1) providing advice on ATP programs, plans, and policies; (2) reviewing ATP's efforts to assess the economic impact of the program; (3) reporting on the general health of the program and its effectiveness in achieving its legislatively mandated mission; and (4) functioning solely as an advisory body, in accordance with the provisions of the Federal Advisory

Committee Act. Additional information on the ATP Advisory Committee, including its most recent annual report, is available at http://www.atp.nist.gov/atp/adv_com/ac_menu.htm.

National Research Council

Over the past decade, ATP has been the subject of external reviews focused on program performance, including two broad programmatic reviews by the National Research Council (NRC) Board on Science, Technology, and Economic Policy (STEP). The results of the first NRC review are available in a report entitled *The Advanced Technology Program: Challenges and Opportunities*, published in 1999 and online at http://www.nap.edu/books/0309067758/html/. The report from the second NRC review was published in 2001and is available online at http://www.nap.edu/books/030907410X/html/.

The NRC found, among other things, that:

- " . . . the Advanced Technology Program is an effective Federal partnership program . . . Its cost-shared, industry-driven approach to funding promising new technological opportunities has shown considerable success in advancing technologies that can contribute to important societal goals such as improved health diagnosis (e.g., breast cancer detection), developing tools to exploit the human genome (e.g., colon cancer protection), and improving the efficiency and competitiveness of U.S. manufacturing" (Summary of Findings, p. 87).

- "The extensive assessments of the program show that it appears to have been successful in achieving its core objective, that is, enabling or facilitating private sector R&D projects of a type, or in an area, where social returns are likely to exceed private returns to private investors" (p. 88).

Program Assessment Rating Tool (PART)

During the FY 2004 budget cycle, ATP was among the first programs evaluated by OMB using the new Program Assessment Rating Tool (PART). Overall OMB rated ATP "adequate", with an overall score above the government-wide average for all programs rated at that time. Through the PART assessment, OMB highlighted the following:

- ATP is a well-managed program with adequate strategic planning and regular performance reviews;
- ATP has an open and competitive grant process; and
- ATP's annual performance measures are adequate and suggest some progress over time; however, OMB noted, "it is difficult to identify the extent to which ATP funding was required for projects".

ATP scored lowest in the "program purpose and design" and "results" section of the PART, reflecting OMB's assessment that the need for the program is unclear and that the program's results, while showing progress, may not indicate "unique or significant impact." OMB did not make any specific recommendations for ATP program management to implement.

Cross-cutting Activities

Other government agencies

The Advanced Technology Program (ATP) leverages the expertise of scientists and engineers from a wide variety of government agencies and laboratories participating on ATP Source Evaluation Boards. In addition, ATP program managers work with program managers from other government agencies to ensure that projects are complementary and relevant: coordination committees in several disciplines have been brought together for this purpose. This also creates an opportunity to examine government R&D from a high level for specific technologies.

Private sector

The Advanced Technology Program was established to co-fund with the private sector a broad array of path-breaking new industrial technologies. The program solicits proposals for innovative, high-risk R&D in any industry or field of technology that offers the potential for widespread benefits for the U.S. economy and society as a whole. ATP projects range from aquaculture to X-ray lithography, and the program has contributed significantly to technological advances in fields as diverse as automated DNA analysis, automobile assembly, tissue engineering and software systems. Companies of any size may apply to ATP and many successful projects have been developed by small companies. Many universities have participated in ATP-supported research, but industry must lead ATP projects.

External Factors and Mitigating Circumstances

ATP has little control over many aspects of the performance measures listed in this document. ATP is designed to fund high-risk technologies through partnerships with industry; both the nature of the projects and the location of the research performance intrinsically convey a high degree of uncertainty and a relatively low degree of control. For instance, the rate at which ATP-funded technologies are commercialized will vary in part due to technological uncertainties intrinsic to the R&D enterprise and in part to the particular strategies and efforts of the businesses performing the research. Other metrics, such as publication and patenting rates, will be affected not only by the success of the technology development effort but also by company-specific strategies and market conditions. For example, patenting is more common in some industries than others, and a variety of factors affect the patenting and/or publishing choices of individual firms. Variation in growth rates and development trajectories add additional uncertainty: some technologies are commercialized rapidly once the research is completed, while others require extensive product development and clinical trials before significant commercialization can occur. There are no practical mitigation strategies for these external sources of uncertainty other than maintaining robust program management and data collection systems. Over the course of ATP funding, companies are required to abide by the terms and conditions of the cooperative agreement, which include intellectual property and commercialization provisions.

Resource Requirements Summary

(Dollars in Millions. Funding amounts reflect total obligations.)
Information Technology (IT)
Full Time Equivalent (FTE)

MEP Performance Goal: Raise the productivity and competitiveness of small manufacturers

	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Estimate	FY 2005 Base	Increase/ Decrease	FY 2005 Estimate
NIST								
Industrial Technology Services								
Manufacturing Extension Partnership	103.3	105.9	108.2	111.1	40.0	39.2	0.0	39.2
Working Capital Fund	1.1	0.5	0.3	0.2	0.6	0.1	0.0	0.1
Total Funding	104.4	106.4	108.5	111.3	40.6	39.3	0.0	39.3
IT Funding	2.9	1.5	3.1	2.6	0.7			0.7
FTE	91	87	89	89	68	41	0	41

Targets and Performance Summary

NIST Performance Goal 4: Raise the productivity and competitiveness of small manufacturers

Measure	FY2000 Target	FY2000 Actual	FY2001 Target	FY2001 Actual	FY2002 Target	FY2002 Actual	FY2003 Target[3]	FY2003 Actual	FY2004 Target[4]	FY2005 Target[5]
Number of clients served by MEP Centers receiving Federal funding[1]	New	20,903	New	21,420	21,543	18,748	16,684	18,422	6,517	6,705
Increased sales attributed to MEP Centers receiving Federal funding[2]	$670M	$698M	$708M	$636M	$726M	$953M	$522M	Available Dec 2004	$228M	$238M
Capital investment attributed to Centers receiving Federal funding[2]	$864M	$873M	$913M	$680M	$910M	$940	$559M	Available Dec 2004	$285M	$298M
Cost savings attributed to MEP Centers receiving Federal funding[2]	$545M	$482M	$576M	$442M	$497M	$681	$363M	Available Dec 2004	$156M	$163M

1 FY 2001 and FY 2002 data for this measure have been adjusted from previously reported figures. Actual counts reported in the FY 2004 Annual Performance Plan were the result of an error in reporting correct data provided by MEP.

2 FY 2003 actuals are not yet available due to data collection requirements (lag is one year).

3 FY 2003 targets have been updated to reflect actual FY 2003 appropriation.

4 FY 2004 targets assume passage of the FY 2004 Consolidated Appropriations bill, which includes an annual level for MEP of $39.6M (which, less recissions, nets $38.7M). The estimates provided also assume that these performance indicators can be directly scaled to the size of the federal investment in the MEP Program. This assumption is problematic: Due to the magnitude of the difference between the FY 2003 appropriation and the level proposed for FY 2004, it is difficult to predict the structure, scale and scope, operational capabilities, and likely performance levels of the MEP Program as a whole.

5 FY 2005 targets assume the request level of $39.2M. For reasons described in footnote 4, these targets are highly uncertain and likely will need to be amended in light of pending budget and program changes.

Corresponding Strategic Goal

Strategic Goal 2: Foster science and technological leadership by protecting intellectual property, enhancing technical standards and advancing measurement science.

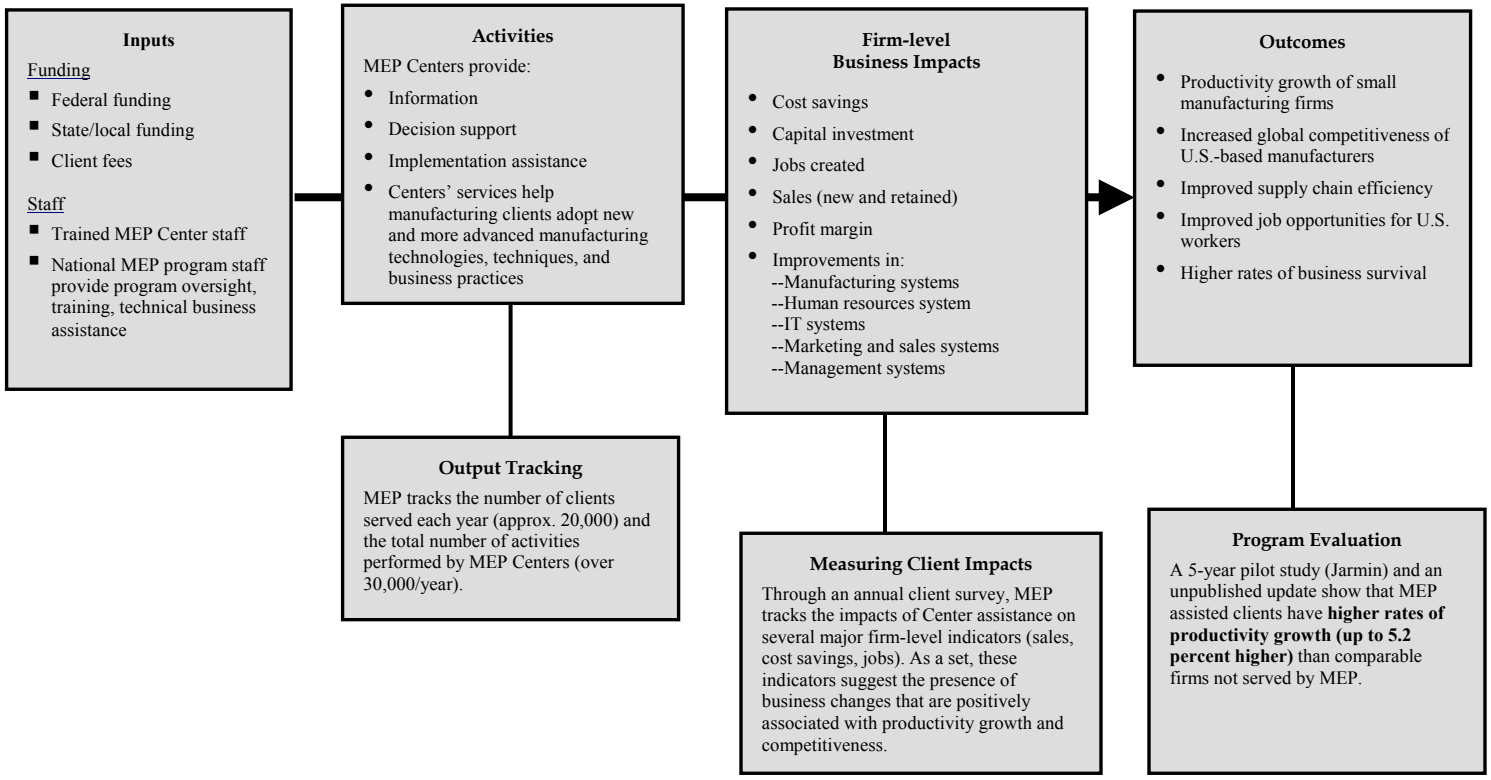
Rationale for Performance Goal

Operating under the authority of 15 U.S.C. 278k, the Manufacturing Extension Partnership (MEP) is a federal-state-local partnership program that provides small U.S. manufacturers with access to manufacturing technologies, resources, and expertise. The MEP program consists of a nationwide network of manufacturing extension centers which are linked to state, university, and private sources of technology and expertise to assist small manufacturers in adopting new and advanced manufacturing technologies, techniques, and business practices.

The Nation's 350,000 small manufacturers employ approximately twelve million people—about two-thirds of the manufacturing workforce—and produce intermediate parts and equipment that contribute more than half of the value of U.S. manufacturing production. Their role in manufacturing supply chains means that the Nation's future manufacturing productivity and competitiveness will rest largely on the ability of these small establishments to improve their quality, raise their efficiency, and lower their costs. The national MEP network helps small companies transform themselves into high performance enterprises – productive, innovative, customer-driven, and competitive – by efficiently providing high value technical and advisory services including access to industry best practices.

MEP's ultimate goal is to measureably improve the productivity and competitiveness of all its clients. The model below demonstrates the impact path (or value creation chain) of the MEP program – from inputs such as appropriated funds and staff to end-outcomes such as productivity improvements for the small manufacturing sector. In addition, the model also depicts how NIST measures the progress of the MEP program along its impact chain.

MEP's Impact Path and Evaluation Methods: Results-based Management for Advisory Services



Explanation of Performance Measures

The goal of MEP is to assist small manufacturing establishments overcome barriers to productivity growth and competitiveness by providing information, decision support, and implementation assistance to help these businesses adopt new and more advanced manufacturing technologies, techniques, and business practices. MEP tracks its activities (number of clients served) and through an annual client survey collects data on the impact of its services on three key quantitative business indicators that as a set indicate changes that are positively associated with productivity growth and competitiveness: (1) increased sales attributed to MEP assistance, (2) capital investment attributed to MEP assistance, and (3) cost savings attributed to MEP assistance. The measures represent only partial indicators of the impact of the MEP Centers.[1] Many of the benefits of MEP's services are intangible, difficult to quantify, and/or are qualitative in nature.

FY 2003 target performance levels have been adjusted from those published in the FY 2003 Annual Performance Plan and reflect the actual FY 2003 appropriation received. FY 2004 targets assume passage of the FY 2004 Consolidated Appropriations bill, which includes an annual level for MEP of $39.6M (which, less recissions, nets $38.7M). FY 2005 targets assume the request level of $39.2M. Theses estimates also assume that the Program's performance indicators can be directly scaled to the size of the federal investment in the MEP Program. This assumption is problematic: Due to the magnitude of the difference between the FY 2003 appropriation and the level proposed for FY 2004, it is difficult to predict the structure, scale and scope, operational capabilities, and likely performance levels of the MEP Program as a whole. Because the FY 2004 and FY 2005 funding levels will require some degree of program restructuring, the respective target performance levels will need to be reviewed and revised once appropriations are final and consequent program changes are implemented.

External Program Evaluation

Economic Studies

The MEP program provides resources needed by small manufacturing establishments to overcome cost and knowledge barriers to realizing productivity growth and improvements in business performance. The program's progress toward achieving its fundamental objective has been evaluated through rigorous, controlled-comparison studies that evaluate the productivity of MEP-served clients relative to similar companies that did not receive MEP assistance. One study, a five-year pilot study conducted by R.S. Jarmin of the Center for Economic Studies (U.S. Census Bureau), showed that MEP-assisted clients had significantly higher rates of productivity growth than non-MEP clients ($484M in additional value added for client firms).[1] An unpublished update to this original study also prepared by the Center for Economic Studies found that the average MEP client experienced 5.2 percent higher productivity growth between 1996 and 1997 and 4.7 percent faster employment growth compared to non-MEP clients. The findings cover a larger subset of all MEP clients.

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[1] Reported data reflect the impact of MEP services primarily on small manufacturing establishments; on some occasions, Centers may elect to serve establishments with over 500 employees. Based on recently compiled survey data, approximately 95 percent of the clients served by MEP are small establishments with fewer than 500 employees; these clients account for approximately 93 percent of the attributed sales impacts.

[1] R.S. Jarmin, "Evaluating The Impact Of Manufacturing Extension On Productivity Growth," *Journal of Policy Analysis and Management*, Vol 18, No. 1, Winter 1999, pp. 99-119.

National Academy of Public Administration (NAPA)

In FY 2003, NAPA, an independent, nonpartisan organization chartered by Congress to improve government performance, completed the first phase of a two-part review of the MEP program. The first phase focused on re-examining MEP's core premise--that there are barriers that prevent small manufacturers from obtaining the technical and business advice that they need to improve their productivity and overall competitiveness. Findings from the first phase of the study include:

> "…barriers to improving the productivity of small manufacturers identified by earlier studies remain, although they have changed in their relative impacts. Additionally, several other factors have grown in importance and in some ways have made the challenges regarding small manufacturer improvement efforts more difficult. There are further opportunities for improving the way services are provided, yet the MEP Program does perform in a capable and effective manner, delivering impacts significantly beyond the costs of operating the program. The Panel finds that the core premise of the Program remains viable as it is fulfilling its mission by leveraging both public and private resources to assist the nation's small manufacturers." (p. 1)

The full report is available on NAPA's Web site at: http://www.napawash.org/Pubs/NIST0903.pdf.

Visiting Committee on Advanced Technology (VCAT)/MEP National Advisory Board

As with other NIST programs, the programmatic objectives and management of MEP are reviewed regularly by the Visiting Committee on Advanced Technology (VCAT), a legislatively mandated panel of advisors that meets quarterly to review NIST's policies, organization, budget, and programs. MEP also is reviewed by its National Advisory Board (MEPNAB), which was established by the Secretary of Commerce in October 1996 and meets three times a year to 1) provide advice on MEP programs, plans, and policies; 2) assess the soundness of MEP plans and strategies; 3) assess current performance against MEP program plans; and 4) function solely in an advisory capacity, and in accordance with the provisions of the Federal Advisory Committee Act. The MEPNAB members bring a variety of manufacturing backgrounds to the Board, including small and large manufacturing, labor, academia, economic development, consulting and state government. This mix provides MEP with the outside advice critical to maintaining and enhancing the program's focus on its customers—the U.S. small manufacturers. Additional information on MEP's National Advisory Board, including its most recent annual report, is available at http://www.mep.nist.gov/about-mep/advisory-board.html#annualreport.

Program Assessment Rating Tool (PART)

In conjunction with the FY 2004 budget, MEP was evaluated by OMB using the PART instrument. OMB's evaluation of MEP was positive, with an overall rating of "moderately effective" (only 30 percent of all programs evaluated in FY 2004 were rated moderately effective or effective). Through the PART assessment, OMB highlighted the following:

- MEP is a well-managed program with adequate strategic planning and regular performance reviews;
- MEP has an open and competitive process for the establishment of new centers; and
- MEP's annual performance measures are adequate and demonstrate benefits to MEP clients; however, OMB noted, "it is difficult to identify the impact of MEP on the manufacturing community as a whole".

MEP scored lowest in the "program purpose and design" section of the PART, reflecting OMB's assessment that "it is not evident that there is a need for a Federal response in this area". OMB did not make any specific recommendations for MEP program management to implement.

Cross-cutting Activities

Intra-Department of Commerce

MEP has collaborated with the International Trade Administration (ITA), the Minority Business Development Agency (MBDA), and the Economic Development Administration (EDA) on a number of projects. For example, MEP has worked with ITA on efforts to open global markets to American small and medium-sized manufacturers interested in but inexperienced with exporting activities.

Other government agencies

MEP collaborates with a wide range of agencies that regulate or provide programs and services that affect small manufacturing businesses, including the Departments of Agriculture, Defense, Energy, Health and Human Services, Housing and Urban Development, and Labor, as well as with the Environmental Protection Agency, National Aeronautics and Space Administration, and the Small Business Administration.

Private sector

As described above, MEP Centers, delivering services to firms in all 50 states and Puerto Rico, work directly with small and medium-sized manufacturing establishments—typically, those with fewer than 500 employees. Because the MEP Centers are joined together in a network through NIST, even the smallest firms are able to tap into the expertise of knowledgeable manufacturing and business specialists throughout the United States. MEP Centers assist firms in areas such as quality management systems, business management systems, human resource development, market development, materials engineering, plant layout, energy audits, and environmental studies.

External Factors and Mitigating Circumstances

The economic and technological environment for small manufacturers in the United States continues to change rapidly. To maximize its effectiveness, MEP must not only respond rapidly to its clients' changing needs, but also must anticipate changes in the business environment facing smaller manufacturers.

Resource Requirements Summary

(Dollars in Millions. Funding amounts reflect total obligations.)
Information Technology (IT)
Full Time Equivalent (FTE)

BNQP Performance Goal: Catalyze, recognize, and reward quality and performance improvement practices in U. S. businesses and other organizations

	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Estimate	FY 2005 Base	Increase/ Decrease	FY 2005 Estimate
NIST								
Scientific and Technical Research and Services								
National Quality Program	5.3	5.4	4.9	5.7	5.9	5.4	0.0	5.4
Working Capital Fund	3.5	1.1	0.2	2.5	2.5	2.5	0.0	2.5
Total Funding	8.8	6.5	5.1	8.2	8.4	7.9	0.0	7.9
IT Funding	0.7	0.7	0.3	0.7	0.7			0.7
FTE	51	49	54	44	46	43	0	43

Targets and Performance Summary

NIST Performance Goal 5: Catalyze, recognize, and reward quality and performance improvement practices in U.S. businesses and other organizations

Measure	FY2000 Target	FY2000 Actual	FY2001 Target	FY2001 Actual	FY2002 Target	FY2002 Actual	FY2003 Target	FY2003 Actual	FY2004 Target	FY2005 Target
Percent of applicants indicating satisfaction with the relevance of the feedback report	New	81%	New	85%	New	86%	New	Data available April 2004	88%	88%
Number of Baldrige criteria disseminated	New	New	New	New	New	New	New	948,832	1,032,486	1,129,735

Corresponding Strategic Goal

Strategic Goal 2: Foster science and technological leadership by protecting intellectual property, enhancing technical standards, and advancing measurement science.

Rationale for Performance Goal

Quality and performance improvement have become requirements, not options, for competitive businesses and high-performance organizations of all types. Through the Baldrige National Quality Program (BNQP), NIST provides a systematic and well-tested set of business values, performance criteria, and assessment methods that all organizations can use to improve their productivity and effectiveness. Overall, BNQP catalyzes the business community to define what organizations must do to improve their performance and attain (or retain) market leadership, and provides a mechanism for broadly disseminating that information.

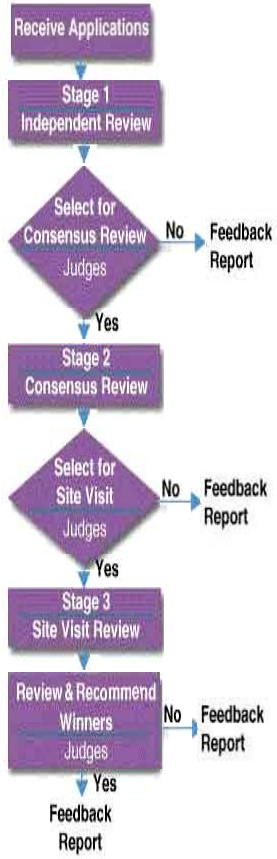
Explanation of Performance Measures

Previously, BNQP reported on two output measures: (1) the total number of applications to the Malcolm Baldrige National Quality Awards (MBNQA) and Baldrige-based state and local awards; and (2) the number of printed BNQP *Criteria for Performance Excellence* documents that are distributed by BNQP. These two measures are being discontinued for two reasons: First, there are inherent difficulties in collecting the state and local data for these metrics. Data from state programs are uneven and can take months to collect; for example, in January 2003, forty-nine state, regional, and local quality award programs were asked to provide information on these and other metrics, but only thirty-nine programs responded and, of these, ten did not report application information for confidentiality or other reasons. The completeness and timeliness of data generated by state quality programs is difficult to ensure. Second, the National, state, and local programs are using the Internet as the primary method for information dissemination. This shift to predominantly on-line dissemination has decreased the number of Baldrige Criteria mailed and as a result, reduced the overall significance of the measure.

The Baldrige National Quality Program (BNQP) has developed new, more meaningful performance measures that better illustrate progress on three core BNQP objectives: improving applicant satisfaction, increasing participation in the Malcolm Baldrige National Quality Awards, and promoting the growth of quality awareness and performance excellence throughout the United States.

Applicant Satisfaction with the Relevance of the Feedback Report

Every organization submitting an application to the Malcolm Baldrige Quality Award (MBNQA) receives an in-depth review, and once it is determined the application will not move onto the next stage, a team of Baldrige-trained examiners prepare a written feedback report for the organization. The comprehensive feedback report highlights the organization's strengths and opportunities for improvement based on the organization's responses to the seven Baldrige categories included in the *Criteria for Performance Excellence*. As the graphic illustrates, the feedback report encapsulates the entire review process, and BNQP is committed to ensuring applicant satisfaction with the usefulness and relevance of the feedback report. Through a systematic survey, BNQP gathers applicant satisfaction with the feedback report and uses the information in its own continuous improvement efforts.



Number of Baldrige Criteria Disseminated

One method BNQP uses to increase participation in the Malcolm Baldrige National Quality Awards (MBNQA) and to promote the growth of quality awareness and performance excellence throughout the United States is the dissemination of the BNQP *Criteria for Performance Excellence.* This measure represents a direct count of the number of C*riteria* disseminated by the National Quality Program through on-line downloads and hard copy distributions by BNQP and the American Society for Quality (ASQ assists BNQP with the application review process, preparation of award documents, publicity, and information transfer). While this measure demonstrates a very high level of *Criteria* dissemination, it should not be interpreted as the number of distinct users who have read or utilized the documents. In addition, this measure represents only a portion of the total dissemination of the *Criteria* and Baldrige quality concepts; it does not capture the additional dissemination channels, such as the reproduction of the *Criteria* in textbooks, articles, and other documents. Baldrige concepts are also disseminated through informal channels including presentations by BNQP staff and volunteer examiners, academic programs, consulting services, and business and organizational literature. BNQP also promotes quality awareness and performance excellence through on-line tools such as *e-Baldrige Self Assessment and Action Planning, Are We Making Progress?*, and *Getting Started with the Criteria for Performance Excellence*. These questionnaires and guides assist organizations in assessing their current performance and how to implement improvements.

In addition to the new output metrics described above, BNQP will continue to use other methods to assess the program's relevance and utility, such as occasional executive surveys and review of anecdotal evidence.

External Program Evaluation

Economic Studies

Economics professors Albert N. Link, of the University of North Carolina, and John T. Scott, of Dartmouth College, recently examined the Malcolm Baldrige National Quality Award program and estimated the total economic benefits of the program at almost $25 billion, for a benefit-to-cost ratio of 207 to 1. They determined the total operational costs, including the value of executives' volunteered time to review applications, to be $119 million. Through 2000, forty-one companies had received the Baldrige National Quality Award, and NIST had received 785 applications. However, thousands of other organizations of all sizes and in all sectors of the economy have benefited by using the Baldrige *Criteria for Performance Excellence* as the foundation for performance management and quality improvement programs. Thousands of paper and electronic copies of the *Criteria* are disseminated each year to organizations across the country. Professors Link and Scott examined data from a survey of corporate members of the American Society for Quality (ASQ). They estimated the total benefits to the ASQ members from using the *Criteria* to be $2.17 billion. To determine the benefits to the economy as a whole, they extrapolated the ASQ data based on the assumption that other companies in the economy benefit to the same extent as ASQ member companies.

External Review

In general, the programmatic objectives and management of the BNQP are reviewed by the Visiting Committee on Advanced Technology. In addition, the performance of BNQP is evaluated by its Board of Overseers, a Federal panel of national quality experts from business and academia that advises the Secretary of Commerce. An important part of the board's responsibility is to assess how well BNQP is serving the national interest. The board reviews all aspects of BNQP, including the adequacy of the Baldrige *Criteria* and processes for making Baldrige Awards, and reports its recommendations to the Secretary. Additional information about BNQP's Board of Overseers is available at http://www.quality.nist.gov/Overseers.htm.

Cross-cutting Activities

Other government agencies

Many national and state agencies, such a the Department of Defense, the Veterans Administration, and the Pennsylvania Department of Transportation use the *Criteria* for self-assessment and internal award programs

Private sector

BNQP has proven to be a remarkably successful government and private sector team effort. The annual government investment of about $5 million is bolstered by a contribution of more than $100 million from private sector and state and local organizations, including $15 million raised by private industry to help support the program, and the time and efforts of hundreds of largely private sector volunteers. The cooperative nature of this partnership is perhaps best illustrated by Baldrige Award's Board of Examiners. Each year, more than 400 experts from industry, educational institutions, governments at all levels, and nonprofit organizations volunteer many hours reviewing applications for the Award, conducting site visits, and providing each applicant with an extensive feedback report citing strengths and opportunities to improve.

External Factors and Mitigating Circumstances

Currently, non-profit organizations (except from the education or health care sectors) are not eligible to compete for the Baldrige Award. BNQP's ability to further promote quality awareness and performance excellence will depend in part upon acquiring the formal authority to conduct research, develop data on best practices, and generate self-assessment primers and other educational materials.

Resource Requirements Summary

(Dollars in Millions. Funding amounts reflect total obligations.)
Information Technology (IT)
Full Time Equivalent (FTE)

NTIS Performance Goal: Enhance public access to worldwide scientific and technical information through improved acquisition and dissemination activities

	FY 2000 Actual	FY 2001 Actual	FY 2002 Actual	FY 2003 Actual	FY 2004 Estimate	FY 2005 Base	Increase/ Decrease	FY 2005 Estimate
NTIS								
Reimbursable	38.3	34.7	27.7	27.7	51.2	40.0	0.0	40.0
Direct								
Total Funding	38.3	34.7	27.7	27.7	51.2	40.0	0.0	40.0
IT Funding	9.9	9.8	10.7	5.7				
FTE	230	196	186	181	260	260	0	260

Targets and Performance Summary

NTIS Performance Goal 1: Enhance public access to worldwide scientific and technical information through improved acquisition and dissemination activities

Measure	FY2000 Target	FY2000 Actual	FY2001 Target	FY2001 Actual	FY2002 Target	FY2002 Actual	FY2003 Target	FY2003 Actual	FY2004 Target	FY2005 Target
Number of New Items Available (Annual)	New	New	New	505,068	510,000	514,129	520,000	530,910	525,000	530,000
Number of Information Products Disseminated (Annual)	New	New	New	14,524,307	16,000,000	16,074,862	17,000000	29,134,050	18,000,000	18,500,000
Customer Satisfaction	New	New	New	97%	97%	98%	98%	97%	98%	98%

Corresponding Strategic Goal

Strategic Goal 2: Foster science and technological leadership by protecting intellectual property, enhancing technical standards, and advancing measurement science.

Rationale for Performance Goal

The National Technical Information Service (NTIS) operates a central clearinghouse of scientific and technical information that is useful to U.S. business and industry. Without appropriated funds, NTIS collects scientific and technical information; catalogs, abstracts, indexes, and permanently archives the information; disseminates products in the forms and formats most useful to its customers; develops electronic and other new media to disseminate information; and provides information processing services to other Federal agencies. NTIS's revenue comes from (1) the sale of technical reports to business and industry, schools and universities, state and local government offices, and the public at large; and (2) from services to Federal agencies that help them communicate more effectively with their employees and constituents.

NTIS continues to meet the challenge of permanent preservation of and ready access to the taxpayers' investment in research and development through the acquisition, organization, and preservation of the titles added annually to the permanent collection. NTIS promotes the development and application of science and technology by providing technologically advanced global e-commerce channels for dissemination of specialized information to business, industry, government, and the public. NTIS has implemented a new initiative to provide the public with increased access to government information. The NTIS bibliographic database (from 1990 to the present) will be available via the Internet free of charge. NTIS now allows users to download any item in its collection in electronic format for a single low fee, or at no charge if it is less than twenty pages. In addition, NTIS will create links that will hyperlink customers to other agency Web sites that offer documents for free download. These recent developments and initiatives are a result of NTIS's new business model that maximizes utilization of the World Wide Web and e-commerce in its information collection and dissemination activities.

NTIS collects its material primarily from U.S. government agencies, their contractors, and grantees, as well as from international sources. The NTIS permanent collection includes approximately three million titles, including reports describing the results of federally sponsored research, statistical and business information, audiovisual products, computer software and electronic databases developed by federal agencies, and reports prepared by foreign research organizations. NTIS maintains a permanent repository of these information products as well as offering approximately 498,000 online electronic items to its many customers, primarily researchers and business managers in private industry. The disseminated materials may include computer downloads, paper, microfiche, audiovisual, and electronic media.

Collection of scientific and technical information from various contributors, and dissemination of that information to an even larger audience is highly dependant on external factors and therefore, not entirely controllable. For example, the amount of new material available is highly dependent on budgetary and program decisions made by other agencies. NTIS's efforts to ensure the public easy access to available scientific and technical information enhanced acquisition and dissemination activities are implemented and monitored through the following performance measures.

Explanation of Performance Measures

Number of New Items Available (annual)
The number of items available for sale to the public from NTIS includes scientific, technical, and engineering information products added to the permanent collection, as well as items made available through online electronic subscriptions.

Each publication added to the permanent collection is abstracted, catalogued, and indexed so that it can be identified and merged into the permanent bibliographic database for future generations of researchers and the public who may benefit from this valuable research. Other information products are available as full text documents in electronic format through numerous NTIS online information services. This material is acquired primarily from U.S. government agencies, their contractors and grantees, and also from international sources. NTIS collects approximately 30,000 scientific and technical reports annually and another 500,000 items in the form of articles, updates, advisories, etc. that are contained in various subscription products and databases it distributes. The number of new information products available each year from NTIS is approximately 530,000, but the number largely depends on input from other government agencies.

Number of Information Products Disseminated (annual)
This measure represents information disseminated and includes compact discs, diskettes, tapes, online subscriptions, Web site pages, as well as the traditional paper and microfiche products.

The shift in information dissemination practices from traditional paper copy to electronic-based dissemination has improved NTIS's ability to provide quality products, increase the number of products distributed, and increase the number of customers that have access to valuable scientific and technical information. NTIS is continually striving to stay abreast of the latest technological advances in information dissemination processes to improve its ability to meet the demands of the public. NTIS has implemented an initiative that enables customers to locate and download

information directly from the originating agency's Internet site. NTIS continues to enhance its ability to stay current in the e-commerce environment, while continuing to serve customers that require the more traditional distribution methods, as demonstrated in our targets above.

Customer Satisfaction

This measure represents the percentage of NTIS customers that are satisfied with the quality of their order, the ease of order placement, and the timely processing of that order. Orders for NTIS's vast collection of scientific and technical information are received by phone, fax, mail, and online, and are filled in a variety of formats. NTIS's continual efforts to maintain and possibly improve this very high rate of customer satisfaction are essential to the success of NTIS's performance and mission to collect and disseminate scientific and business-related information.

The percentage of satisfied customers is derived from the number of customer complaints compared to the total number of orders taken. It does not take into account inquires about the status of an order or other general questions. In NTIS' continuing effort to consistently meet customer expectations, steps are underway to include results of customer surveys.

Program Evaluation

The Office of the Inspector General (OIG) prepared an evaluation of NTIS' new business model. The model reflects NTIS' commitment to maximize dissemination of unclassified scientific, technical, engineering, and business-related information to U.S. business, industry and the public. The OIG recommendations were to: (1) make it clear that there are major uncertainties associated with the business model's estimates during future discussions and presentations of the model, (2) periodically review the projections to determine whether they are realistic and achievable, and (3) evaluate the impact of the new business model on NTIS' operations on a monthly basis, and determine whether the new model is achieving the desired results or whether modifications are needed.

Cross-cutting Activities

Other government agencies

NTIS provides a variety of services that assist other agencies in developing, producing, and disseminating their information. These services include fax management services; reproduction of paper, computer, and microfiche products; billing and collection services; product storage and distribution; Web hosting; and database management and distribution.

External Factors and Mitigating Circumstances

NTIS's requirement to operate on a substantially self-sustaining basis precludes it from making all information in its collection available on the Web for free, despite the public's desire for this information and its aversion to paying for government information on the Web. NTIS is currently addressing this concern by putting its bibliographic database, from 1990 to the present, on the Internet for free and creating links to agency Web sites that support digital identifiers offering documents to the public for free downloading. In addition, if available, documents smaller than twenty pages can be downloaded for free from NTIS's Web site. Documents greater than twenty pages, if available in electronic form, can be downloaded for a fee. Of course, all documents in the NTIS collection can be ordered in the traditional formats (i.e. paper and microfiche), if desired.

Unit Cost Measures

US/OTP

Due to the nature of the US/OTP program and its outputs, it is not possible to provide unit cost measures of efficiency. As recognized by performance evaluation specialists, policy advisory offices are among the governmental functions that are intrinsically difficult to evaluate and for which there typically are no meaningful quantitative performance metrics.

NIST

OMB recognized during the course of the FY 2005 PART assessment of the NIST laboratories that "R&D-performing organizations typically cannot provide unit cost measures of efficiency due to the long time frame for research, multivariate inputs, and diverse sets of outputs that derive from R&D activities". For similar reasons, unit costs measures are not available for the ATP and MEP programs. NIST has agreed to collaborate with OMB to identify alternative measures of programmatic efficiency.

NTIS

NTIS' primary objective is to collect and disseminate scientific and technical information. This valuable information is made available for distribution in a variety of formats designed to accommodate customer's needs. Two of these formats are representative of the shift of information dissemination from the traditional paper product to electronic dissemination. The average cost to disseminate this information to the public is reflected in the unit cost measures below.

	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007
Unit cost to disseminate a paper product	$76.89	$77.66	$78.44	$79.22	$80.01
Unit cost to disseminate an electronic product	$7.34	$7.27	$7.20	$7.13	$7.06

Program Assessment Rating Tool (PART)

US/OTP

OMB has not conducted a PART assessment for US/OTP.

NIST

- **NIST Laboratory Program**
  OMB applied the Program Assessment Rating Tool to the NIST laboratories during the FY 2005 budget cycle, and concluded the assessment by rating the laboratories as "effective". Details on OMB's findings and NIST's response are provided in the sections above pertaining to NIST's performance goals 1 and 2.

- **Advanced Technology Program**
  OMB applied the Program Assessment Rating Tool to the NIST Advanced Technology Program during the FY 2004 budget cycle, and concluded the assessment by rating the ATP as "adequate". Details on OMB's findings are provided in the section above pertaining to NIST's performance goal 3.

- **Manufacturing Extension Partnership**
  OMB applied the Program Assessment Rating Tool to the NIST Manufacturing Extension Partnership Program during the FY 2004 budget cycle, and concluded the assessment by rating the MEP Program as "moderately effective". Details on OMB's findings are provided in the section above pertaining to NIST's performance goal 4.

NTIS

OMB has not conducted a PART assessment for NTIS.

Data Validation and Verification

NIST

NIST's Program Office conducts an annual review of its quantitative performance data to ensure that it is complete and accurate. During this process, Program Office staff discuss the data with appropriate offices to assess results relative to forecasts and to understand long-term trends and drivers of performance. Program Office staff also evaluate the verification and validation procedures used by the offices that provide the source data and verify that the source data itself is identical to or consistent with the reported data. A set of NIST's quantitative performance measures and associated verification and validation procedures were audited recently by the Commerce Department Inspector General, and NIST has implemented the suggestions for improvement identified in that audit.

For its qualitative performance measure, the NIST Program Office provides summary findings from the annual NRC review of the NIST laboratories; the complete results of that evaluation are available for public review. The Program Office also provides the results from economic impact studies, which are conducted by external economists and technical specialists using well-developed research methods and standard economic and business analysis metrics, as specified and monitored by NIST.

The table below summarizes the data validation and verification processes for each organization in the Technology Administration.

Performance Measure	Data Source	Frequency	Data Storage	Internal Control Procedures	Data Limitations	Actions to be Taken
US / OTP Measure 1: Support and improve the American innovation system	US/OTP	US/OTP performance is cumulative and is reported annually	US/OTP	Data represent verifiable activities performed by US/OTP activities. For reporting activities, data are gathered and analyzed by technology policy analysts using accepted analytical practices, are submitted for peer review to other DOC bureaus, other agencies, and academia, as appropriate, prior to publication.	Output Only	None
US / OTP Measure 2: Advance the role of technology in U.S. economic growth and homeland security	US/OTP	US/OTP performance is cumulative and is reported annually.	US/OTP	Data represent verifiable activities performed by US/OTP activities. For reporting activities, data are gathered and analyzed by technology policy analysts using accepted analytical practices, are submitted for peer review to other DOC	Output only	None

				bureaus, other agencies, and academia, as appropriate, prior to publication.		
US / OTP Measure 3: Strengthen the competitive position of American technology industries.	US/OTP	US/OTP performance is cumulative and is reported annually	US/OTP	Data represent verifiable activities performed by US/OTP activities. For reporting activities, data are gathered and analyzed by technology policy analysts using accepted analytical practices, are submitted for peer review to other DOC bureaus, other agencies, and academia, as appropriate, prior to publication.	Output only	None
US / OTP Measure 4: Strengthen US/OSTP's organization, capabilities, and resources to maximize the effectiveness of its activities and services	US/OTP	US/OTP	US/OTP	Data represent verifiable activities performed by US/OTP activities.	Output only	None
NIST Measure 1a: Qualitative assessment and review of technical quality and merit using peer review	On-site interviews and discussions with NIST management and research staff by independent external scientific and technical experts, managed by the NRC.	Annual	NRC	Verification and oversight of laboratory-specific expert review panels provided by the NRC Board on Assessment of NIST Programs.	Data are qualitative in nature	None
NIST Measure 1b: Citation impact of NIST-authored publications	Institute for Scientific Information (ISI)	Ongoing	NIST	Citation database is developed by ISI. Data represent analysis performed by the NIST Program Office. Internal verification includes review by the NIST Director's office.	Factors such as self-citations, citation circles, multiple authorship may affect the reliability of any data of this nature. However, even with such factors citation frequency analyses is broadly recognized as an indicator of the importance or utility of a publication.	None
NIST Measure 1c: Peer-reviewed technical publications	NIST Office of Information Services	Ongoing	Publications data are gathered and maintained by NIST Office of Information Services	Data represent direct and verifiable counts of NIST technical publications to be published in peer-reviewed journals and have been cleared for publication by the internal Washington and Boulder Editorial Review Boards. Internal verification includes review by the NIST Director's Office.	Output only	None

NIST Measure 2a: Standard Reference Materials (SRMs) sold NIST Measure 2b: NIST-maintained datasets downloaded NIST Measure 2c: Number of items calibrated	NIST Technology Services	Ongoing	NIST Technology Services	Data represent direct and verifiable counts of: 1) the number of SRMs sold to customers at the close of the fiscal year; 2) the number of times a NIST-maintained dataset has been downloaded; and 3) counts of items calibrated by the NIST Laboratories. Internal verification includes review by NIST Technology Services and the NIST Director's Office and Budget Division.	Data provide information on output levels only. NIST measure 2b reflects the number of users accessing these datasets; it does not reflect unique users or capture how the data was used.	There are no obvious replacements for these output tabulations; NIST recently revised its output measures to better illustrate the demand for NIST products and services.
NIST Measure 2d: Economic Impact Studies	Research is contracted to economic and technical experts, who generate quantitative estimates and qualitative information using performance data gathered through industry surveys and field research. Project cost data are supplied by NIST.	Intermittent	Contractors collect and maintain all data. Survey results, cost data, and all calculations are presented in final reports.	Data are gathered and analyzed by highly qualified economists and technical specialists using well-developed research methods and standard economic and business analysis metrics, as specified and monitored by NIST.	Elements of study populations often are too diffuse to measure; availability and quality of industry data often are uneven; impact estimation typically requires counterfactual data, which can be difficult to estimate; outcomes are specific to each project—i.e., results are not cumulative and not readily comparable.	None

Measure 3a: Cumulative number of publications NIST Measure 3b: Cumulative number of patents filed NIST Measure 3c: Cumulative number of technologies under commercialization	Data are gathered from the portfolio of ATP project participants (funded since 1993) through company filings of patent information to the NIST Grants Office (a legal requirement) and an electronic survey instrument under ATP's Business Reporting System (BRS). Separate portfolio-based telephone surveys are conducted of project participants funded prior to 1993 and for post-project data collection.	Annual over the course of ATP funding for projects funded since 1993; intermittent for projects funded prior to 1993; every two years (up to six years) after ATP funding ends.	ATP's Office of Economic Assessment maintains BRS data in an integrated set of databases covering both descriptive information about the funded organizations and survey responses for all participants in ATP-funded research projects.	ATP's Business Reporting System has been evaluated by external auditors. In addition, all ATP reports using BRS data and patent reports filed through the NIST Grants Office are monitored closely by ATP for research quality and are subject to extensive NIST-wide review and critique prior to being issued. In addition, a recent OIG audit of NIST's performance measures included review of two of these metrics -- technologies commercialized and patents filed – and resulted in changes to procedures.	The BRS electronic survey and other telephone survey instruments represent a standardized reporting system. Standard sources of uncertainty include variation in interpretation of specific questions; variation in the estimation techniques used in response to specific questions; variation in the quality of industry data; and missing values.	Administrative procedures have been enacted to increase reliability, per recent DOC IG audit.

NIST Measure 4a: Number of clients served by MEP Centers receiving Federal funding NIST Measure 4b: Increased sales attributed to MEP Centers receiving Federal funding NIST Measure 4c: Capital investment attributed to MEP Centers receiving Federal funding NIST Measure 4d: Cost savings attributed to MEP Centers receiving Federal funding	The MEP client survey instrument was significantly revised in January 2000. The survey is administered by a private firm, Synovate, formerly Market Facts, Inc., located in Arlington Heights, IL.	The survey is conducted four times per year, and clients are selected based on when they completed the first project with an MEP Center in the previous year. For example, a client that completed a project with an MEP Center in February 2000 was surveyed in January/Febru-ary 2001. This change was implemented to reduce respondent burden, raise overall response rates, and improve data quality. Clients are asked to estimate how the group of MEP-provided services over the previous two years has affected their business performance in the 12-month period prior to the survey date.	Survey data is sent directly to MEP for analysis. MEP reviews and stores survey data received from Synovate.	Internal verification includes significant review of the Synovate data by MEP staff. Criteria are in place for identifying and verifying significant outliers in the data. In addition, a recent DOC OIG audit of NIST's performance measures included a review of one of MEP's measures ("increased sales attributed to MEP assistance"); in response to this audit, NIST implemented some improvements to data verification procedures.	As with similar survey instruments, sources of uncertainty include variation in interpretation of specific questions; variation in the estimation techniques used in response to specific questions; variation in the quality of industry data; missing values; and other common survey problems. Synovate uses standard survey techniques to clean the data, ensure accuracy and reliability, and improve the response rate (79 percent in the most recent survey, covering FY 2001). Reported data reflect the impact of MEP services primarily on small manufacturing establishments; on some occasions, Centers may elect to serve establishments with over 500 employees.	Verification procedures recently improved per DOC OIG audit. Decisions about implementing additional improvements to verification procedures depend on a number of factors including the impact of these changes on MEP's relationships with the Centers and clients, cost, and feasibility.

NIST Measure 5a: Applicant Satisfaction with Relevance of the Feedback report Measure 5b: Number of Baldrige *Criteria* Disseminated	Measure 5a: Data are collected though a survey conducted by the BNQP. Measure 5b: BNQP tracks the number of *Criteria* mailed; NIST's Enterprise Systems Division collects statistics on the number of users accessing NIST websites, including the Baldrige *Criteria*	Measure 5a: annual Measure 5B: ongoing	Measure 5a: Baldrige National Quality Program Measure 5b: NIST's Enterprise Systems Division	Measure 5a: Data is reviewed by the Baldrige Panel of Judges. Measure 5b: Data represent direct and verifiable counts of the number of times Criteria was mailed or downloaded Internal verification for both measures includes review by the NIST Director's Office.	Measure 5a: The entire survey population is small and the current response rate is approximately 60 percent. Measure 5b: This does not reflect unique users; capture how the *Criteria* are used; or represent informal dissemination channels.	Measure 5a: BNQP is looking into ways to improve overall response rates. Measure5b: none
NTIS Measure 1a: Number of New Items Available (Annual)	NTIS operates and maintains internal systems for processing collected information into available products.	Internal management activity reports are produced daily, summaries are produced monthly.	All performance-related information is stored within NTIS systems.	NTIS accounting and budget offices analyze and report performance output data and revenue and cost data to management. Data verification is provided through regular internal and independent auditor reporting.	None	None
NTIS Measure 1b: Number of Information Products Disseminated (Annual)	NTIS records every transaction using a commercial order processing system modified to meet its specific needs together with a standard Web analysis software package used by industry.	Internal management activity reports are produced daily, summaries are produced monthly.	All performance-related information is stored within NTIS systems.	NTIS accounting and budget offices analyze and report performance output data and revenue and cost data to management. Data verification is provided through regular internal and independent auditor reporting.	None	None
NTIS Measure 1c: Customer Satisfaction	NTIS operates and maintains internal systems for processing collected information into available products. NTIS records every transaction using a commercial order processing system modified to meet its specific needs.	Internal management activity reports are produced daily, summaries are produced monthly.	All performance-related information is stored within NTIS systems.	NTIS accounting and budget offices analyze and report performance output data and revenue and cost data to management. Data verification is provided through regular internal and independent auditor reporting.	None	None