

National Science and Technology Council Annual Report



1997

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THE WHITE HOUSE
WASHINGTON

Dear Colleague:

I am pleased to transmit the *1997 Annual Report of the National Science and Technology Council*. The president established the NSTC in 1993 to coordinate the diverse parts of the Federal research and development enterprise, especially activities that require and utilize resources of several Federal agencies. In its four years of operations, the NSTC has made substantial progress toward integrating our science and technology investments with the overall national agenda.

The NSTC is a successful experiment in governance of Federal science and technology investments. It capitalizes on the strengths of the mission agencies, but because it is a cabinet-level, interagency council, it avoids the "stovepipes" that can hinder innovation and creativity in Federal programs. As shown in this report, NSTC also encourages cooperation among the public and private sectors, with payoffs in new research and technologies that far exceed the reasonable expectations for either party acting alone.

Thomas Jefferson wisely noted that, "As new discoveries are made, new truths discovered, and

manners and opinions change with the change of circumstances, institutions must advance also to keep pace with the times." In its dedication to reinvent government, the Clinton Administration has lived up to that sage admonition, and the NSTC is a vivid example of the benefits that can accrue from changes in institutions. It has been an honor to help lead NSTC through its formative years, and I look forward to many contributions from this outstanding interagency council as we enter the 21st century.

Sincerely,
John H. Gibbons
Assistant to the President
for
Science and Technology

NATIONAL SCIENCE AND TECHNOLOGY COUNCIL 1997 ANNUAL REPORT

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ABSTRACT

EXECUTIVE SUMMARY

*I ask you to simply imagine that new century full of its promise,
molded by science, shaped by technology, powered by
knowledge. These potent transforming forces can give us lives
fuller and richer than we have ever known.
--William Jefferson Clinton, May 1997*

Science and technology are among the principal determinants of change and agents of progress. Not surprisingly, therefore, participation in the front ranks of research and innovation has been and will continue to be essential for our national capacity to capture the gains of scientific and technological advances. In the United States, half of our economic productivity in the last half-century is attributable to technology innovation and the science that supported this innovation. The knowledge-based society of the next century only increases the centrality of research, innovation, and human capital as our principal strengths.

The Clinton Administration is changing the nature of Federal S&T policy and policymaking to meet the challenges of the 21st century. The President established the NSTC in 1993 to coordinate the diverse parts of the Federal research and development (R&D) enterprise and to foster synergy among the varied talents of the Federal S&T workforce. The NSTC completed its fourth year of operation in November 1997.

During 1997, the NSTC's committees and working groups focused on activities that contributed to the President's goals for S&T. In addition, NSTC worked closely with the Office of Management and Budget (OMB) to develop R&D budget guidance for the Federal departments and agencies to help integrate our science and technology investments with the overall national agenda.

National Science and Technology Goals

At the beginning of his Administration, President Clinton made a commitment to the American people to integrate Federal agency R&D budgets to ensure that the Nation's S&T investments served broad national goals, as well as agency missions. In 1997, the NSTC undertook activities related to the following broadly stated S&T goals:

- Maintain World Leadership in Science, Mathematics, and Engineering
- Promote Long-term Economic Growth
- Sustain a Healthy, Educated Citizenry
- Improve Environmental Quality
- Harness Information Technology
- Enhance National Security and Global Stability

R&D Budget Guidance

Through the NSTC process, Federal agencies and departments identify priority research areas that are important to national efforts and require investments across agencies. These interagency priority areas reflect objectives of maintaining excellence, maximizing effectiveness, and minimizing costs with R&D investments. For the fourth consecutive year, the OMB and NSTC issued broad R&D policy principles and goals to guide individual agencies in preparing their FY 1999 budgets. Agencies were instructed to adhere to R&D investment principles that give priority to Federal research and education programs that:

- are peer reviewed and selected through a merit based competitive process;
- are planned and funded jointly through industry, university, or State partnerships;
- are designed to establish and use quantitative and qualitative indicators, as appropriate, to provide realistic and objective measures of progress and performance;
- are designed to improve interactions with State and local governments to enable technology development;
- build professional capacity for the workforce; and,
- promote international cooperation in science and technology.

Appendix A lists the Interagency High Priority Research Areas for preparation of the FY 1999 budgets.

NSTC Streamlining

Over the past four years the NSTC has become the primary mechanism for coordinating and strengthening Federal R&D. During 1997, an internal evaluation of the NSTC identified opportunities to capitalize on experience and streamline operations. NSTC merged some activities and reduced the number of standing committees from nine to the following five:

1. Committee on Environment and Natural Resources (CENR);
2. Committee on International Science Engineering and Technology (CISET);
3. Committee on National Security (CNS);
4. Committee On Science (CS) (incorporating the activities of the former Committees on Fundamental Science; and Health, Safety and Food); and,
5. Committee on Technology (CT) (incorporating the activities of the former Committees on Technological Innovation; Computing, Information, and Communications; Education and Training; and Transportation).

As with the previous structure, an Office of Science and Technology Policy (OSTP) Associate

Director co-chairs each Committee with a designated agency policy official. Committees establish the working groups necessary to fulfill the needs of the Administration. The main body of this report describes the activities of these committees and their working groups during 1997.

President's Committee of Advisors on Science and Technology

President Clinton established the President's Committee of Advisors on Science and Technology (PCAST) to advise him on matters involving S&T, and to assist the NSTC in securing private sector involvement in its activities. The PCAST, which consists of distinguished individuals from industry, education and research institutions, and other non-governmental organizations, serves as the highest level private sector advisory group for the President and the NSTC. The direct link to the activities of the NSTC reflects the Administration's intention to incorporate advice from the private sector in developing the S&T budgets and policies of this Administration and to secure private sector advice on the implementation and evaluation of budgets and policies. Appendix B describes activities of the PCAST for 1997.

NATIONAL SCIENCE AND TECHNOLOGY COUNCIL 1997 ANNUAL REPORT

NATIONAL SCIENCE AND TECHNOLOGY GOALS

The NSTC, through its Committees, focuses Federal R&D activities on the President's goals for science and technology. These goals include:

- **Maintain World Leadership in Science, Mathematics, and Engineering**

The Administration is unequivocally committed to maintaining leadership across the frontiers of scientific knowledge. The nation's prior investment has yielded science and engineering advances without peer, promoted science and engineering education, and contributed to technological innovation. This scientific strength is a treasure that we must continue to build on. Thus, even as the Federal budget deficit is eliminated, the Administration has protected and increased the level of investment in key Federal basic science programs.

- **Promote Long-Term Economic Growth**

Technical progress is the single most important factor in generating sustained economic growth, estimated to account for as much as half of the Nation's long-term growth over the past 50 years. Technology underpins our fastest growing industries and high-wage jobs, provides the tools needed to compete in every business today, and drives growth in every major industrialized nation.

- **Sustain a Healthy, Educated Citizenry**

Improving the health of our nation's citizens continues to be a major goal of our Federal investment in S&T. Starting in 1862 with the financial support for our Land Grant institutions and State Agricultural Experiment Stations, and through the establishment in 1887 of the laboratory that became the National Institutes of Health (NIH), the United States has developed a system of intra- and extramural support for health-related research. We have more recently committed ourselves to similar efforts in science, engineering, and mathematics education. The degree to which our nation prospers in the 21st century will depend on our abilities to develop scientific and

technical talent in our youth, to provide lifelong learning to a well-educated workforce able to embrace the rapid pace of technological change, and to raise the level of public scientific and technological literacy.

- **Improve Environmental Quality**

Environmental issues are enormously complex, requiring scientific understanding that is both deep and broad in order to address them. The dramatic increase in world population and industrial activities during the last century are affecting the environment in profound and potentially irreversible ways. The future of the U.S. rests on our ability to sustain the bounty of natural resources our environment provides. Improving environmental quality requires supporting a broad and comprehensive research agenda, including observing, documenting, understanding, assessing, and predicting environmental change and its consequences; using natural resources in a sustainable manner; understanding and preserving biodiversity; and developing analytical tools that integrate social, economic, and natural sciences to support policy formulation and decision making that prevents or mitigates adverse effects on public health or ecological systems.

- **Harness Information Technology**

No technology promises to affect our world more profoundly than the rapid sweep of digital technology. Every sector of our economy -- manufacturing and services, transportation, health care, education, and government -- is being transformed by the power of information technologies to create new products and services and new ways to communicate, resulting in significant improvements in productivity and knowledge sharing.

- **Enhance National Security and Global Stability**

National security and global stability are critical areas where international S&T collaboration and interagency coordination are needed for progress. Collaboration and coordination are needed because the issues faced cannot be solved through the efforts of a single country or a single agency. Threats to human health and safety, such as diseases and natural disasters, do not recognize national borders and require international coordination and effective application of S&T. International S&T relations have become an integral part of the overall U.S. foreign policy and play a vital role in the nonproliferation of weapons of mass destruction, arms control, meeting the challenges of global threats, and strengthening economic security.

1997 ACTIVITIES OF NSTC WORKING GROUPS AND COMMITTEES

The diversified Federal research portfolio serves the multiplicity of missions for which our Federal departments and agencies are responsible. This distributed system of research funding provides strong linkages between research and the core agency missions, but also places a premium on coordination and complementation of agency programs. The NSTC, which in 1997 completed its fourth year of operation, is improving such coordination, so that our Federal investment is being used to the best advantage in the national interest.

NSTC WORKING GROUPS

Some activities undertaken by the NSTC span the interests of all standing committees. These activities are managed as ad hoc working groups. In 1997, four efforts functioned in this capacity.

Federal Laboratory Reform

During its first term, the Clinton/Gore Administration began to review and reform the Federal S&T (FS&T) system with the goal of realizing greater service to the nation at a lower cost. One NSTC effort focused on improving the cost-effectiveness, productivity, and scientific quality of the Federal laboratory system. This effort includes agency intramural research, research performed at national laboratories or other Federally Funded R&D Centers (FFRDCs), and the provision and operation of major, shared federally funded scientific user facilities. Together these performers receive about 40% of civilian FS&T investment

OSTP coordinated a study, published in March 1997, that assessed the progress of the Department of Defense (DOD), the Department of Energy (DOE), and the National Aeronautics and Space Administration (NASA) in implementing Presidential Decision Directive (PDD) NSTC – 5, September 1995, to focus laboratory missions, reduce excessive agency oversight, and streamline administrative processes. The study confirmed that the agencies are making progress, but much work remains. As a result, an NSTC Interagency Working Group (IWG) was established during the summer of 1997 to implement the recommendations and improve information flow among all S&T agencies with intramural research programs. The report of the IWG should be available in mid-1998.

Global Positioning System (GPS)

On March 29, 1996, the President signed Presidential Decision Directive NSTC-6, establishing national policy for the management and use of the U.S. Global Positioning System (GPS) and related U.S. Government augmentations. The primary goals of this policy are to strengthen and maintain U.S. national security, enhance our economic competitiveness, and encourage the acceptance of GPS as a standard for international use.

In 1997, the Secretaries of Defense and Transportation chartered an Interagency GPS Executive Board to manage GPS and its U.S. Government augmentations and to provide policy guidance for U.S. efforts to assure global acceptance of GPS. DOD and the Department of Transportation (DOT) reached an agreement assuring the availability of a second frequency to civilian GPS users, a major step towards acceptance of GPS as an international standard. In response to the President's policy, the Department of State (DOS) initiated formal consultations with Japan, the European Union (EU), and Russia on development of bilateral agreements on GPS cooperation.

Aviation Safety and Security

On February 12, 1997, the White House Commission on Aviation Safety and Security submitted its Final Report to the President. Many of the Commission's recommendations for improving aviation safety and security or for modernizing the nation's air traffic control (ATC) system require research and development or technology implementation.

NSTC agencies are working to ensure that the R&D needed to address its recommendations is in place and fully coordinated. The National Aeronautics and Space Administration (NASA), the Federal Aviation Administration (FAA), and DOD were asked to prepare a joint S&T plan for implementing the Commission's recommendations that details agency roles and responsibilities, partnership opportunities, and five-year budgets. NASA has stepped up to the aviation safety challenges by reprogramming

\$500 million over the next five years to R&D aimed at reducing the aviation fatal accident rate. Planning for this research initiative is being closely coordinated with the FAA and DOD through

NASA's Aviation Safety Investment Strategy Team.

Health Preparedness for Future Troop Deployments

The Presidential Advisory Committee on Gulf War Veterans' Illnesses (PAC) issued their Final Report on December 31, 1996, which included a recommendation that a Presidential Review Directive (PRD) be initiated. As a result, PRD-5, *Development of Interagency Plans to Address Health Preparedness for and Readjustment of Veterans and Their Families After Future Deployments*, was enacted April 21, 1997. The PAC highlighted seven broad categories to be addressed by this review, which have been grouped into the following areas: deployment health, record keeping, research, and risk communications.

An NSTC IWG was established to oversee the progress of the review. The IWG established separate task forces to address planning needs associated with each of the four areas. Each task force produced a strategic planning document to be integrated into a final report by spring 1998.

COMMITTEE ON ENVIRONMENT AND NATURAL RESOURCES

The purpose of the Committee on Environment and Natural Resources (CENR) is to foster and implement a coordinated multi-agency and interdisciplinary focus for Federal research and development resources in pursuit of the goals of sustainable use and management of our natural resources, maintaining biological diversity, maintaining a safe water resource, improving air quality, reducing exposure to toxic substances, limiting losses from natural hazards, understanding climate change, and minimizing ozone depletion.

Environmental Monitoring and Research Initiative

A fundamental improvement in the way the U.S. monitors its environment is required to meet the challenges of the next several decades. Current monitoring programs do not provide integrated data across multiple natural resources at the temporal and spatial scales needed to develop policies based on current scientific understanding of ecosystem processes. An integrated framework for environmental monitoring and assessment will enable the evaluation of the Nation's natural resources and their sustainability on national and regional scales. Such an integrated framework is essential for an accurate description of environmental conditions. Current programs, while effective at tracking specific components of the ecosystems, often are deficient in providing information on how different components interact.

Significant progress was achieved in the Environmental Monitoring and Research Initiative. A cooperative arrangement among government, universities, environmental groups, and industry has been established to produce the initial draft of the "report card" on the health of the Nation's ecosystems called for by the Vice President. A pilot project has also been initiated in the Mid-Atlantic region to demonstrate the effectiveness of integrated efforts on a regional scale. Finally, two broad scientific issues, nutrient cycling and biological populations, are being analyzed as a means to investigate the role of a national network of index sites to complement monitoring information provided by surveys and remote sensing.

U.S. Global Change Research Program (USGCRP)

USGCRP's fundamental purpose is to increase understanding of the Earth system and thus provide a sound scientific basis for national and international decision making on global change issues. The

USGCRP focuses on four key areas of Earth system studies: seasonal to inter-annual climate variability; climate change over decades to centuries; changes in ozone, UV radiation, and atmospheric chemistry; and, changes in land cover and terrestrial and aquatic ecosystems. Other important activities include development of an integrated global observing and monitoring system; construction of a data management system that will promote full and open access to global change data, products, and information services; involvement of scientists from the United States in international research and assessment activities; and, promotion of scientific literacy on global change issues through public education. The USGCRP agencies made important contributions to the authorship and review of a special report of the Intergovernmental Panel on Climate Change (IPCC) entitled *The Regional Impacts of Climate Change: An Assessment of Vulnerability*, and to several IPCC technical papers on other key issues.

A national assessment of the consequences of climate change for the United States was initiated during 1997. Eight of a series of 20 regional workshops, to be completed by mid-1998, were held around the country. A National Forum on Climate Change Impacts was held in Washington, DC, November 12-13, 1997 to explore the relationship between regional and national-scale impacts and to continue planning for a national assessment. The National Scientific Assessment, to be completed during 1999, will become a contribution from the U.S. to the IPCC Third Assessment Report. The first series of reports from the assessment is scheduled to be completed in 1999. In addition, USGCRP agencies developed plans to enhance their consequence-based research in order to build the base for improved national assessments in the future.

Air Quality Research

The NSTC agencies support an array of research activities aimed at improving our understanding of atmospheric processes and the effect of human activities on the atmosphere. While the Nation's commitment to better air quality is clear and unequivocal, the best means for attaining it are far from clear. By enhancing the effectiveness and productivity of U.S. air quality research, we will provide a better scientific basis for decision making on policies designed to improve air quality.

The North American Research Strategy for Tropospheric Ozone (NARSTO) moved forward in its mission to perform coordinated research and assessment on the behavior of tropospheric ozone and the development of workable and effective ozone management strategies. During 1997, successful field campaigns were conducted in Mexico City, and in the Western and Midwestern United States. The National Acid Deposition Assessment Program (NADAP) produced its 1996 Integrated Assessment Report to Congress, which is currently nearing completion of NSTC review.

Research on Ecological Systems

In 1997, the NSTC responded to an urgent request to develop a national research strategy to respond to the outbreak of the toxic dinoflagellate, *Pfiesteria*, in the mid-Atlantic region. The strategy identifies both immediate and longer-term efforts to deal with the effects and the underlying causes of *Pfiesteria* and other harmful algal blooms. In addition, a plan was developed to assess the effects of hypoxia (very low oxygen conditions lethal to marine life) in the Gulf of Mexico and the possible linkage to upstream land use practices. Six scientific teams have been assembled and begun their work on topics including characterization of hypoxia, ecological and economic consequences, sources and loads of nutrients transported to the area, effects of reducing nutrient loads, evaluation of methods to reduce nutrient loads, and evaluation of the costs and benefits.

A Biodiversity and Ecosystem Informatics Work Group was established to provide an interagency

coordinating mechanism to guide development of the National Biological Information Infrastructure (NBII). Among its areas of emphasis is effort to enhance recognition and support for the Integrated Taxonomic Information System (ITIS). ITIS is an interagency activity that is building the first comprehensive on-line reference of standardized biological nomenclature and taxonomy for all U.S. species. The interagency ITIS team was recently awarded a Vice Presidential "Hammer Award" for its innovative partnership and its efforts to provide this valuable information service as a part of the NBII.

Endocrine Disruptor Research Initiative

Endocrine disruptors are chemicals present in the environment in low concentrations as pollutants, such as DDT, dioxins, polychlorinated biphenyls (PCBs), phthalates and pharmaceuticals that may affect the endocrine systems of vertebrates. In 1997, the Endocrine Disruptors Working Group completed a framework for characterizing research needs, an inventory of ongoing federally supported research, and prepared the first draft of *Endocrine Disruptors: Research Needs and Priorities—1998*, that will be published when the review is completed.

Research on Toxics and Risk Assessment

Toxic materials are of concern because of the harm they can cause to both human health and ecological systems. The potential for harm is typically expressed in terms of risk, and management of toxic materials involves assessing and managing risk. The R&D priorities for toxics and risk revolve around research, development, and demonstration of science and technology for monitoring, prevention, control, and remediation of risks from toxic materials.

The CENR established an IWG on Mercury to resolve the scientific issues related to the Environmental Protection Agency's (EPA's) Mercury Study Report to Congress. In addition, the final report of the Interagency Oxygenated Fuels Assessment Steering Committee was completed and published in June 1997. The report describes the current state of understanding of critical scientific issues related to the winter oxygenated gasoline program mandated under the Clean Air Act Amendments, including potential health impacts, fuel economy, and performance issues.

Research on Reducing the Impacts of Natural Disasters

Although natural hazards are inevitable, they need not lead inevitably to disasters. Through prudent actions, the U.S. can reduce losses of life and property as well as social and economic disruptions from natural hazards. The NSTC has established a goal to reduce the cost of natural disasters to the U.S. economy through support of a coordinated, multidisciplinary, multi-agency research program. Key aspects of this program include focusing R&D efforts on improving future risk assessment and risk management capabilities, and improvement of analytical, modeling, forecasting, and information dissemination tools.

CENR's Subcommittee on Natural Disaster Reduction (SNDR) and the Institute for Business and Home Safety (IBHS) established Public Private Partnership 2000 (PPP 2000) to seek opportunities for government and nonprofit, private-sector organizations to work together to reduce vulnerability to natural hazards in communities throughout the Nation. A series of PPP 2000 Forums on Public Policy Issues in Natural Disaster Reduction are bringing representative stakeholders together to break through traditional patterns of thinking. Each Forum will produce recommendations for strategies to reduce losses from natural hazards. Such recommendations will be valuable input for U.S. policy making and will also contribute to the ongoing goals defined during the United Nations International Decade for Disaster Reduction (DDR). For FY 1999, five agencies Department of Commerce (DOC), Department

of Interior (DOI), U.S. Department of Agriculture (USDA), Federal Emergency Management Administration (FEMA), and National Science Foundation (NSF), coordinated their budget initiatives through CENR's Subcommittee on Natural Disaster Reduction, leading to a new level of program integration in this vital area.

Program Guide to Federally Funded Environment and Natural Resources R&D

The second edition of the Guide was compiled and published in 1997. This popular document serves as a reference on competitive funding opportunities for use by colleges, universities, and other research institutions. The Guide describes the competitive processes for merit review and evaluation, lists potential opportunities for funding, and provides points of contact and web site information for specific agency programs.

COMMITTEE ON INTERNATIONAL SCIENCE, ENGINEERING, AND TECHNOLOGY

The Committee on International Science, Engineering, and Technology (CISET) addresses the international aspects of the national research and development agenda as well as the relationship between the national agenda and principal U.S. foreign policy goals. CISET's activities are directed toward three broad, complementary goals:

1. To identify, enhance, and coordinate international cooperation that can strengthen the domestic S&T enterprise and promote U.S. economic competitiveness and national security.
2. To utilize American leadership in S&T to address global issues, and to support the post-Cold War tenets of U.S. foreign policy -- promoting democracy, maintaining peace, and fostering economic growth and sustainable development.
3. To coordinate the international aspects of Federal R&D funding across federal agencies.
In 1997, CISET focused on the following areas.

Emerging and Re-emerging Infectious Diseases

Emerging infectious diseases--new, resurgent, or drug resistant infections of which incidence in humans has increased within the past two decades or threatens to increase in the near future--present one of the most significant health challenges facing the global community. The NSTC Task Force on Emerging Infectious Diseases, co-chaired by OSTP and the Centers for Disease Control (CDC), led the implementation of the June 1996 Presidential Decision Directive (PDD) on Emerging Infectious Diseases (NSTC-7). The first annual progress report, highlighting a number of accomplishments, was delivered to the President in December 1997.

Accomplishments in the area of emerging infectious disease research include the following: agreements with 22 states and localities to cooperate in strengthening national notifiable disease systems, conduct disease surveillance, diagnose diseases, and investigate outbreaks; expansion of research on emerging infectious diseases and disease vaccines, both domestically and internationally; cooperation with medical associations and medical schools to increase the attention given to emerging infectious diseases in curricula; development of a work plan for more effective quarantine and containment; consultations with the International Society of Travel Medicine to improve communications and establishment of the surveillance network of travel medical clinics; support for U.S. leadership on this issue in bilateral and multilateral fora; support for U.S. participation in the

WHO-proposed revision of the International Health Regulations for improved screening and quarantine capabilities; and creation of a DOD surveillance and response system for infectious diseases.

International Engagement

Strategic coordination was provided for the Administration's S&T relations with priority nations and regions through the NSTC's CISET. Through the NSTC interagency process, international S&T relations have been more fully integrated into our overall foreign policy and specifically sharpened with Japan, Russia, China, South Africa, the European Union, as well as the Asia Pacific Economic Cooperation forum and the Summit of the Americas. In addition, CISET continued to facilitate U.S. participation in multilateral cooperative science projects and programs through the Organization for Economic Cooperation and Development (OECD) Megascience Forum and other efforts.

Over the course of the year, a coordinated, interagency strategy was developed to strengthen the value of S&T relations with Japan. Agencies identified priorities for enhanced partnerships, issues of concern that impede S&T relations, and mechanisms for managing the relationship in a more effective manner. A report on this effort will be released in 1998.

CISET helped develop the U.S. position and prepare for two major signings this year, illustrating the importance of international cooperation in science and technology. First, the U.S. and the European Union signed their first-ever umbrella science and technology agreement, as called for in the Transatlantic Agenda, signed by the President in Madrid in 1995. The U.S. also agreed to join other countries to build the Large Hadron Collider at CERN in Europe, which will involve more than 4,000 scientists and engineers in 45 countries. CISET also helped develop two S&T related initiatives for the historic Summit between President Clinton and the President of China.

COMMITTEE ON NATIONAL SECURITY

The Committee on National Security (CNS) is chartered to facilitate coordination of Federal efforts in R&D in areas of national security. CNS identifies relevant priorities, programs, and plans across Federal agencies with a view toward advising the NSTC about the vigor and appropriateness of Federal investments in R&D that underpin a sound national security posture. In 1997, CNS focused on nonproliferation and initiated a new working group on technology transfer.

Nonproliferation

The Nonproliferation and Arms Control Technical Working Group (NPAC TWG) is the designated mechanism for the President to coordinate all federally funded R&D supporting the controlling of arms and stemming the proliferation of weapons of mass destruction. The NPAC TWG systematically inventories programs, coordinates among departments and agencies, identifies gaps and overlaps, highlights areas in need of high-level attention, and makes recommendations for maximizing the effectiveness of the total program. It has made a substantial contribution to ensuring the effectiveness of nonproliferation and arms control-related R&D.

During 1997, the NPAC TWG, maintained its primary missions of coordinating Federal R&D in non-proliferation and arms control and examining policies, programs and plans across Federal agencies. In addition to its periodic briefings for the relevant National Security Council (NSC) policy internal working groups, the White House OSTP and the CNS, the NPAC TWG held discussions with Senate staffers on ways that NPAC TWG elements could complement the work of Congressional working groups.

International Technology Transfer

The International Technology Transfer Working Group was established in December 1996 to identify ways to improve national policy mechanisms governing international technology interactions. The Working Group has initiated efforts to examine the export of technology in the context of its impact on U.S. security and competitiveness, the adequacy of existing control mechanisms, and interagency approaches and concerns.

COMMITTEE ON SCIENCE

The purpose of the Committee on Science (CS) is to advise and assist the NSTC, with emphasis on those federally supported efforts that develop new knowledge in the sciences, mathematics, and engineering. The Committee on Science addresses significant national policy matters that cut across agency boundaries and provides a formal mechanism for interagency science policy development, coordination, and information exchange.

Review of the University/Federal Government Partnership

The longstanding partnership between the Federal government and universities aimed at advancing S&T in the national interest is a core element of America's world-leading R&D enterprise. Federal commitment to the partnership remains strong and Federal support for university-based research has increased. However, both parties report growing stresses in the partnership and concerns about the best ways to sustain the relationship into the future. Therefore, the Assistant to the President for Science and Technology initiated a review of this partnership to (1) determine what might be the major stresses in the areas of research, education, and administrative regulations; and (2) determine the best ways to address the issues raised in this examination. The products of the review will assist both parties in developing strategies that promote cost-effective, university-based research, allocate research costs fairly, strengthen the research-education linkage, and maintain appropriate accountability for expenditure of public funds.

Over the past year, Federal representatives from agencies that support the vast majority of university research and education National Institutes of Health (NIH), NSF, DOD, USDA, NASA, and DOE) have been developing a clearer understanding of the nature of the partnership that exists between the Federal government and universities. This included assessing the current status of the partnership's financial relationship (cost sharing), how agencies directly or indirectly support education through their support for research, and what regulatory barriers exist that could be lowered or removed to enhance the productivity of the partnership. Input was solicited from the university community and from other Federal agencies. RAND's Critical Technologies Institute provided analysis of this input. A report is expected in 1998.

Cloning/National Bioethics Advisory Commission (NBAC)

NBAC was created by Executive Order 12975 on October 3, 1995. The Commission advises the NSTC on issues arising from research on human biology and behavior, including clinical research, and the applications of such research. The Commission is comprised of non-governmental experts in the relevant scientific disciplines, law, philosophy and theology, as well as community representatives. No more than one-half of its members may be scientists. The Commission operates under the provisions of the Federal Advisory Committee Act.

In June 1997, NBAC released the report, *Cloning Human Beings*. The President requested this report after the announcement in February 1997 of the successful cloning of a sheep from fully differentiated cells. In response to recommendations in the report, legislation prohibiting the use of this technology to clone human beings was transmitted by the President to Congress in June 1997.

Research Integrity

During the spring of 1996, the former NSTC Committee on Fundamental Science (CFS) established the Research Integrity Panel to address the concern that Federal research agencies lacked a common definition and approach to addressing cases of research misconduct for federally sponsored research. The Committee was concerned that this lack of uniformity presented the research community with a great deal of uncertainty and that it required research organizations, such as universities, to be responsive to multiple definitions and approaches. The Panel reported its results to the Committee in the fall of 1996.

The NSTC continued its efforts to develop a common definition of research misconduct and a set of guiding principles to shape agency efforts to ensure the integrity of the research record. Research agencies were given an opportunity to respond to the NSTC Committee approved definition and principles. The proposed definition is being modified based on agency comments on the draft. A final definition will be sent for full NSTC approval in spring 1998.

Plant Genome

With recent advances in plant genetics and in genomics technology, the time is right to develop a strategy on how the Federal government should contribute to a comprehensive effort on expanding our knowledge of plant genomes, especially those plants that contribute significantly to our nation's agricultural sector. The Administration has been supportive of plant genomics and has been actively funding a project designed to sequence the genome of the *Arabidopsis thaliana*, a relatively simple mustered plant, which is the most promising starting point before tackling more complex plants like corn. In addition, the Administration received a congressional request to develop a plant genome plan to guide their efforts in directing appropriations.

An NSTC IWG, was established to develop an integrated plan to map and sequence genomes of agriculturally important plants. The IWG presented a status report in June 1997 that was used by Congress to help shape FY 1998 appropriations decisions for the NSF and the USDA. The report of the IWG was approved and published by NSTC in January 1998.

Food Safety

Even though the U.S. food supply is one of the safest in the world, millions of citizens become ill each year due to food borne pathogens such as E. coli O157:H7 and Salmonella. In response to this threat, the President launched a major food safety initiative in 1997 that includes improved, scientifically-based regulatory procedures, expanded inspection and monitoring, and accelerated research and education programs. Key to the success of this initiative will be the development of sound risk assessment procedures and research leading to new knowledge that can be applied to cost-effective pathogen detection, prevention, and intervention technologies.

In December 1997, the NSTC established an IWG on Food Safety Research. This IWG will develop a coordinated Federal food safety research plan, which will extend to states, industry, and academia. Specifically, the IWG will conduct an in-depth review of all Federal research related to

microbiological aspects of food safety as well as research related to natural toxins and tissue residues of veterinary drugs. Based on this review, the IWG will make recommendations for future coordinated research. This plan will be ready in time for agency use in preparing their FY2000 budget submissions.

Excellence in Mathematics and Science Teaching

A key goal set out in the President's "Call to Action for American Education in the 21st Century" is to "Make sure there is a talented and dedicated teacher in every classroom." Recognizing and rewarding our best teachers helps attract and retain successful members of this demanding profession. Nearly two million of the Nation's three million teachers will turn over during the next ten years. The shortage of qualified teachers is particularly acute in mathematics and science. The Presidential Award for Excellence in Mathematics and Science Teaching (PAEMST) is the Nation's highest commendation for K-12 math and science teachers. Candidates are chosen on the basis of their teaching performance, background, and experience. PAEMST is administered through NSF, and coordinated by OSTP. One science and one math teacher at each level are ultimately recommended as Presidential Awardees. They must be U.S. citizens who teach in one of the 50 states, the District of Columbia, the Department of Defense Dependent Schools, or the U.S. territories.

In 1997, 107 elementary and 107 secondary teachers received Presidential Awards. The Vice President addressed the elementary school recipients and the First Lady the secondary school recipients. All (over 1,000) teacher awardees since 1983 are now linked electronically and have been used as a comparison group in a national study of math and science teachers.

Excellence in Science, Mathematics, and Engineering Mentoring

The educational principles advocated by President Clinton emphasize the importance of high quality mathematics and science education for all Americans. Studies show that such training does lead to more productive and satisfying careers. Indeed, the demand for technically qualified workers in our economy is growing much faster than the supply. Women, minorities, and persons with disabilities have traditionally been very underrepresented in science and mathematics, and every effort should be encouraged to improve their participation rates. The Presidential mentoring award demonstrates the Administration's support for access to education and diversity in the S&T workforce by recognizing the efforts of individuals and institutions that have mentored underrepresented groups.

The second annual presentation of the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring occurred on September 11, 1997. The award was given to 10 individuals and 9 organizations with outstanding records in mentoring African-Americans, Native Americans, Hispanics, Women, and persons with disabilities.

Presidential Early Career Awards for Scientists and Engineers (PECASE)

President Clinton approved the awards program for early investigators across government agencies on February 1, 1996. The purpose of this award is to recognize demonstrated excellence and promise of future success in scientific or engineering research, and the potential for eventual leadership of the recipients in their respective fields. Maintaining leadership across the frontiers of scientific knowledge and producing the finest scientists and engineers for the 21st century, two of the five goals enunciated in the NSTC's *Science in the National Interest*, are both significantly served by this award.

On November 3, 1997, the President selected 60 individuals to receive the second annual Presidential Early Career Awards for Scientists and Engineers (PECASE). These young researchers are

recognized as having the potential to become the future leaders in S&T, university faculties, and Nobel laureates. The recipients were nominated by the following agencies/departments:

1) USDA; 2) DOC; 3) DOD; 4) DOE; 5) Department of Veterans Affairs (VA); 6) NASA; 7) NIH; 8) Department of Health and Human Services (HHS); and 9) NSF.

Children's Initiative

Preparing America's children for the 21st century is among our most important national priorities. Today's children face the promise of a new century of unparalleled opportunity. Yet, too many of them face obstacles that obscure that bright future, including poverty, violence, child abuse, limited educational opportunity, and unhealthy behaviors. To appropriately address these obstacles to a productive future for children at risk, we must develop new knowledge and use it in a way that provides policies and programs that are likely to succeed.

The multi-agency "Children's Initiative" study was released in April 1997. The study, sponsored by the NSTC, with collaboration from the Domestic Policy Council (DPC), assessed the current scope of research on child and adolescent development, identified significant gaps in the research agenda, and developed recommendations for needed efforts not only in the research area but also in linking research and policy development.

COMMITTEE ON TECHNOLOGY

The purpose of the Committee on Technology (CT) is to advise and assist the NSTC to increase the overall effectiveness and productivity of Federal R&D efforts. The Committee addresses significant national policy matters, which cut across agency boundaries and provides a formal mechanism for interagency policy coordination and development of Federal technology activities. The Committee acts to improve the coordination of all Federal efforts in technology. This includes developing balanced and comprehensive R&D programs, establishing structures to improve the way the Federal government plans and coordinates R&D, and advising the Directors, OSTP and OMB, on R&D budget crosscuts and priorities.

Partnership for a New Generation of Vehicles (PNGV)

The Federal government and the U.S. automobile industry have joined in a historic partnership to establish global technical leadership in the development and production of commercially-viable vehicle technology that, over the long term, can preserve personal mobility while further reducing the impact of cars and light trucks on the environment and reducing dependence on imported petroleum. This unprecedented alliance was established on September 29, 1993, and included Federal agencies, national laboratories, universities, suppliers and the United States Council of Automobile Research (USCAR)--a conglomerate of the Big Three U.S. auto makers (Ford, Chrysler, and General Motors). The partnership's goals are: 1) manufacturing productivity improvement; 2) Implement commercial viable innovations from ongoing research on conventional vehicles; and, 3) development of a production prototype by the year 2004 that can achieve three times the fuel efficiency of today's vehicles with comparable cost and performance. The research plan is annually peer-reviewed by the National Research Council (NRC).

The PNGV has accomplished the technology selection and is preparing an announcement of the selected technologies for inclusion into the first PNGV concept vehicles. The selected technologies will be used to produce the first generation prototype PNGV vehicles and will be used to prepare the

production prototypes planned for 2004. The PNGV is responsible for advancing and spinning off several new technologies such as hybrids, composite bodies, and fuel cells, that are now on production track within the participating auto makers, engineering plans.

Partnership for Advanced Technologies for Housing (PATH)

Construction is one of the largest industries in the U.S. and a critical asset for enhancing the Nation's international competitiveness. PATH was established to develop and deliver to practice high performance construction materials and systems, advanced information systems addressing industry needs, automation for construction processes and constructed facilities, knowledge needed for productivity and safety, and measures of effectiveness for construction technology. This initiative responds to a high level of industry interest, and combines Government and industry goals.

Federal government agencies, led by the Department of Housing and Urban Development (HUD) and DOE, with support from DOC, Department of Labor (DOL), the FEMA and EPA, in conjunction with OSTP have begun the formulation of a partnership with builders, developers, product suppliers, insurers and financiers to develop, demonstrate and deploy housing technologies, designs and practices that can significantly improve the quality of housing without raising the cost of construction. The goals of PATH are to create markets, consumer demand, technologies, practices and capabilities so that all new homes by 2010 will be built cheaper, more environmentally sustainable, more disaster resistant, more durable and safer. The first meeting of partners was held and a steering committee created which will set a timetable and agenda for research priorities, road maps and pilot demonstrations.

United States Innovation Partnership (USIP)

USIP, announced in February 1997, establishes a relationship in which the Nation's governors and the Administration cooperate to achieve new economic growth, high quality jobs, and globally competitive businesses by leveraging U.S. science and technology leadership and resources through partnerships among states, the Federal government, industry, and universities.

USIP Task Forces began operating in mid-1997. Their work includes activities to (1) build partnerships to leverage the Federal investment in the Small Business Innovation Research (SBIR) program in Federal agencies, (2) promote electronic commerce, (3) shape the next generation of the Manufacturing Extension Partnership, and (4) provide technology information to entrepreneurs. The SBIR Task Force is the furthest along in its effort and is jointly lead by Kansas and the Small Business Administration. USIP has had some early successes. It helped to compile state comments on the Advanced Technology Program at the DOC and has helped Commerce get state comments about a new program, the Experimental Program to Stimulate Competitive Technology (EPSCoT), before the program was implemented.

Transportation R&D

The Subcommittee on Transportation R&D, formerly the NSTC Committee on Transportation R&D, establishes consistent national transportation R&D priorities and coordinated research programs throughout the Federal government. Government agencies work in partnership with industry and academia to maintain and improve the safety and productivity of the U.S. transportation systems in order to realize the world's safest, most responsive and competitive transportation system by considering human behavior in all aspects, now and in the future.

The Subcommittee's primary accomplishment in 1997 was completion and publication of the first

Federal Transportation Science and Technology Strategy. The Strategy establishes partnership initiatives, identifies long-term enabling research for Federal sponsorship, and initiates development of measures to evaluate the impact of Federal R&D investments. The Subcommittee sponsored a special National Research Council/Transportation Research Board (NRC/TRB) review, which concurred with the general directions established in the Strategy. The NRC/TRB report, which offered suggestions to improve the research planning process, was distributed to Congress and to the transportation community. The Subcommittee has begun work on a technology plan and strategic research plan to guide implementation of the Federal research and partnership initiatives -- which cover aviation, surface transportation, and maritime transportation -- outlined in the Strategy.

Computing, Information, and Communications/Research and Development (CIC/R&D)

The Federal Computing, Information, and Communications/Research and Development (CIC/R&D) programs invest in long-term R&D to advance computing, information, and communications. These programs are an outgrowth of the highly successful, Congressionally-chartered High Performance Computing and Communications (HPCC) initiative that was responsible for catapulting the U.S. into the era of teraflop computers, gigabyte networks, and computation-intensive science and engineering applications. In 1997, the NSTC oversaw work in five Program Component Areas: High End Computing and Computation (HEC); Large Scale Networking (LSN); High Confidence Systems (HCS); Human Centered Systems (HuCS); and Education, Training, and Human Resources (ETHR).

Accomplishments of the Federal CIC/R&D Program in 1997 are described in two publications: *Computing, Information and Communications Technologies for the 21st Century*, March 1997; and *Technologies for the 21st Century: Supplement to the President's 1998 Budget*, November 1997. Additionally, the NSTC sponsored several CIC-related events during 1997:

- PetaFLOPS Software Framework Model Workshop, January 1997
- Algorithms for PetaFLOPS, April 1997
- Workshop on Research Directions for the Next Generation Internet, May 1997
- Workshop on Research and Development Opportunities in Federal Information Services, May 1997

Next Generation Internet (NGI)

On October 10, 1996, President Clinton and Vice President Gore announced the NGI initiative, a 3-year project to: invest in R&D for new networking technologies, such as the ability to handle real-time, multimedia traffic; connect more than 100 research institutions at speeds that are 100 to 1,000 times faster than today's Internet; and demonstrate new applications in areas such as distance education, telemedicine, national security, and collaboratories (laboratories without walls). Built on the base of Federal agency programs currently underway as part of the NSTC's CIC R&D Large-Scale Networking (LSN) working group, the initiative calls for partnerships and collaboration with the private sector and the academic community.

In May 1997, the LSN co-sponsored a workshop on Research Directions for Next Generation Internet. Results of the workshop were subsequently incorporated into an NGI concept paper and a draft implementation plan, which were released for public comment in late July 1997. On the basis of this draft, Congress appropriated \$85 million for NGI in FY 1998, slightly less than the President's request for \$100 million.

Advisory Committee on High-Performance Computing and Communications, Information Technology, and the Next Generation Internet

In February 1997, President Clinton established an Advisory Committee to provide the NSTC, through the Director of OSTP, with guidance and advice on all areas of high performance computing, communications and information technologies. The members bring a broad range of expertise and interests from business and universities.

As one of its first official acts, the Advisory Committee reviewed the draft implementation plans for the Administration's NGI initiative. They reported enthusiastic support for the NGI and made some crucial recommendations for strengthening the program. Members of the Advisory Committee testified before Congress on behalf of NGI. The Committee also launched a review of Federal high-end computing priorities and a more general review of Federal R&D budgets for CIC. Their recommendations will be reported to the President's Science Advisor in June 1998.

APPENDIX A

HIGH PRIORITY AREAS FOR INTERAGENCY R&D FUNDING

ISSUED JUNE 1997

Through the National Science and Technology Council (NSTC) Committees, Federal agencies and departments identified a set of priority research areas that are important national efforts requiring investments across agencies. These interagency priority areas reflect our objectives of maintaining excellence, maximizing effectiveness, and minimizing costs. R&D investment principles provided guidance for our choices. Priority was given to Federal research and education programs that:

- are peer reviewed and selected through a merit based competitive process;
- are planned and funded jointly through industry, university, or State partnerships;
- are designed to establish and use quantitative and qualitative indicators, as appropriate, to provide realistic and objective measures of progress and performance;
- are designed to improve interactions with State and local governments to enable technology development;
- build professional capacity for the workforce; and,
- promote international cooperation in science and technology.

Research areas identified as priorities in the FY 1999 budget preparation are:

1. **Fundamental Research:** Strengthen support for fundamental research as a key to maintaining U.S. leadership across the frontiers of scientific knowledge. Fundamental research provides the underpinning for our Nation's future economic growth and security by allowing advances in areas

such as agriculture, computing, energy efficiency, environmental management, health, transportation, and war-fighting capabilities.

2. **Food Safety Research:** Promote food safety research that provides a scientific foundation for sound food safety policy, innovations in food production to increase safety, and consumer education to improve food safety practices.
3. **Education and Training:** Promote research on teaching and learning in mathematics and science that supports student excellence on standards-based, internationally-benchmarked tests; promote research focused on the development and assessment of new information technology to improve learning in schools, at home, and at work.
4. **Children's Research:** Promote children's research to improve our understanding of the processes that shape human intellectual, physical, and emotional capacities and will lead to the prevention of risky behaviors. Research on children will lead to healthier and better educated children through a better understanding of how children and adolescents can avoid or mitigate the consequences of poverty, child abuse, poor diet, violence, and substance abuse, as well as environmental health and safety hazards.
5. **Emerging Infectious Diseases:** Promote surveillance, response, and prevention of emerging infectious diseases, as directed by the June 1996 Presidential Decision Directive PDD/NSTC-7.
6. **Stemming the Proliferation of the Weapons of Mass Destruction:** Promote science and technology directed towards stemming the proliferation and combating the spread and use of weapons of mass destruction, weapons materials, and delivery systems.
7. **Large-Scale Networking, High End Computing, and Next Generation Internet:** Support the research and development needed to assure U.S. technological leadership in computing, including investments in hardware, software, algorithms, modeling, and simulation.
8. **Buildings Research:** Promote research aimed at lowering the cost of home construction while simultaneously reducing operating costs including energy costs, reducing environmental impacts, and improving safety and durability of homes.
9. **Transportation Research and Development:** Promote research to achieve all three goals of the Partnership for a New Generation of Vehicles (PNGV). Promote technology to improve the safety, security, and efficiency of air and surface transportation using advanced information technology and the Global Positioning System (GPS).
10. **Aviation Safety and Security:** Support research and development aimed at reducing the aviation fatal accident rate by a factor of five within ten years, modernizing our aging air traffic control system using advanced information, communication, and navigation technologies, and enhancing the security of air travel.
11. **Research on Regional Vulnerabilities to Global Change:** Support research on regional vulnerabilities to global change including: (1) regional-scale models of the timing and magnitude of climate change; (2) regional analyses of the consequences of climate change alone and in the context of other pressures on ecosystems; and (3) application of newly developed integrated assessment methods to representative ecoregions.
12. **Environmental Monitoring and Research:** Improve the effectiveness of Federal environmental monitoring and research programs. Near-term steps include: (1) production of a report card on the

health of the Nation's ecosystems as requested by the Vice President; and (2) definition and implementation of regional monitoring and assessment pilot projects.

13. **Natural Disaster Reduction Research:** Promote natural disaster reduction research including risk assessment, improvement of methodologies to assess losses of human life and property, integration of natural disaster information systems, and consolidation of emergency warning/alerting systems.
14. **Endocrine Disruptor Research:** Improve understanding of the ecological and human effects of endocrine disrupting chemicals. Support the international science assessment activities of endocrine disrupting chemicals in order to accurately characterize the existing state of knowledge, define the highest priority research questions, and define and implement an effective research strategy.
15. **North American Research Strategy for Tropospheric Ozone (NARSTO):** Promote research in support of NARSTO including regional field campaigns to characterize air quality and tropospheric ozone behavior, evaluation and dissemination of results, development of options for reducing impacts of ozone pollution, and technology development through public-private partnerships.

APPENDIX B

ACTIVITIES OF THE PRESIDENT'S COMMITTEE OF ADVISORS ON SCIENCE AND TECHNOLOGY (PCAST)

President Clinton established the President's Committee of Advisors on Science and Technology (PCAST) at the same time that he established the NSTC to advise the President on matters involving S&T and to assist the NSTC in securing private sector involvement in its activities. The PCAST, which consists of distinguished individuals from industry, education, and research institutions, and other non-governmental organizations, serves as the highest level private sector advisory group for the President and the NSTC. In 1997, PCAST provided the following reports:

- *R&D Priorities for Sustainable Development*, released in January 1997, reports that the rapid growth in the world's population and its rates of consumption of natural resources has led to a deterioration of environmental conditions which threaten global stability and limit future human prospects. Five interrelated areas—climate change, biodiversity, energy, ecosystems, and food supplies are recommended as S&T investments that would have substantial returns for the health, economic prosperity, security, and well being of all Americans.
- *Report to the President on the Use of Technology to Strengthen K-12 Education in the United States*, released in March 1997. The panel's findings and recommendations are: 1) focus on learning with technology, not about technology; 2) emphasize content and pedagogy, and not just hardware; 3) give special attention to professional development; 4) engage in realistic budgeting; 5) ensure equitable, universal access; and 6) initiate a major program of experimental research.

- *Letter Report on Cloning Technology*, released April 11, 1997. The report endorsed the Administration's prohibition on Federal funding for cloning of human beings and the request that the private-sector adopt a self-imposed moratorium on cloning human beings. PCAST also supports the important and continuing contributions of biotechnology to agriculture and biomedical science and the request of the NBAC for advice on legal and ethical implications of extending the animal experiments to human studies. PCAST recommended that the National Academy of Sciences, Institutes of Medicine ensure that the public understands the complexities surrounding cloning.
- *Federal Energy Research and Development for the Challenges of the Twenty-First Century*, released November 1997. The report recommended focusing the government's energy R&D on projects where high potential pay-offs for society as a whole justify bigger R&D investments than industry would be likely to make on the basis of expected private returns and where modest government investments can effectively complement, leverage, or catalyze work in the private sector.

APPENDIX C

PRESIDENTIAL DIRECTIVE

Development of Interagency Plans to Address Health Preparedness for and Readjustment of Veterans and Their Families After Future Deployments, dated April 21, 1997—Examination of health concerns related to Gulf War service. Provides guidance to the Federal government in reviewing policies and programs and developing a coordinated interagency plan for minimizing or preventing similar post-conflict health concerns in the future.

APPENDIX D

REPORTS

1. *National Environmental Monitoring and Research Workshop*, NSTC Committee on Environment and Natural Resources, February 1997
2. *Program Guide to Federally Funded Environment and Natural Resources*, NSTC Committee on Environmental and Natural Resources, February 1997
3. *Status of Federal Laboratory Reforms*, NSTC, March 1997
4. *1996 Accomplishments of the National Science and Technology Council*, NSTC, March 1997
5. *Integrating The Nation's Environmental Monitoring and Research Networks and Programs: A*

Proposed Framework, Committee on Environment and Natural Resources, March 1997

6. *National Environmental Technology Strategy: Status and Action*, Committee on Science (Committee on Technological Innovation), April 1997
7. *Manufacturing Infrastructure: Enabling the Nation's Manufacturing Capacity*, Committee on Science (Committee on Technological Innovation), April 1997
8. *Natural Disaster Reduction: A Plan for the Nation*, Committee on Environment and Natural Resources, April 1997
9. *Computing, Information and Communications (CCIC) Brochure: Technologies for the 21st Century*, Committee on Technology (Committee on Communications Information and Computing), April 1997
10. *Investing in Our Future: A National Research Initiative for America's Children for the 21st Century*, Committee on Science (Committee on Healthy, Safety and Food R&D), April 1997
11. *Our Changing Planet: The FY 1998 U.S. Global Change Research Program*, Committee on Environment and Natural Resources, June 1997
12. *Interagency Assessment of Oxygenated Fuels*, Committee on Environment and Natural Resources, June 1997
13. *Transportation Science and Technology Strategy*, Committee on Technology (Committee on Transportation R&D), September 1997
14. *Technologies for the 21st Century, Supplement to the President's Budget (FY 1998 Blue Book)*, Committee of Technology (Committee on Computing, Information, and Communications), November 1997
15. Annual Report to the President on Presidential Decision Directive (PDD)/NSTC-7, U.S. Policy on Emerging Infectious Diseases (EID), NSTC Committee on International Science, Engineering, and Technology, EID Task Force, December 1997

Reports and Further Information may be obtained by calling: 202-456-6100 (phone) or 202-456-6026 (fax)

**Reports are Also Available on the NSTC Home Page via Link from the OSTP Home Page at:
<http://www.whitehouse.gov><http://www.ostp.gov>**

ABSTRACT

The President established the National Science and Technology Council (NSTC) in 1993 to coordinate the diverse parts of the Federal Research and Development (R&D) enterprise and to foster synergy among the varied talents of the Federal S&T workforce. The NSTC completed its fourth year of operation and has become the primary mechanism for coordinating and strengthening Federal R&D.

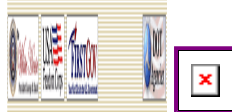
This report highlights 1997 NSTC activities related to broadly stated S&T goals, including: 1) Maintain World Leadership in Science, Mathematics, and Engineering, 2) Promote Long-term Economic Growth, 3) Sustain a Healthy, Educated Citizenry, 4) Improve Environmental Quality, 5) Harness Information Technology, and 6) Enhance National Security and Global Stability. An overview of activities performed by NSTC Working Groups and Committees is presented. The activities of the private sector President's Committee on Science and Technology (PCAST) for 1997 are also included as Appendix A of this report.

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