



NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

ANNUAL REPORT CY 1999

MISSION AND SCOPE

The National Telecommunications and Information Administration (NTIA): (a) serves through the Secretary of Commerce as the principal adviser to the President on domestic and international communications and information policy-making; (b) promotes affordable access to telecommunications services for all Americans and competition in domestic and international markets; (c) manages all Federal use of the electromagnetic spectrum and generally promotes efficient use of spectrum; (d) in partnership with business and other Federal agencies, conducts telecommunications technology research, including standards-setting; and (e) awards grants through the Public Telecommunications Facilities Program, and the National Information Infrastructure initiative.

NTIA is unique among Federal government agencies in that the work of the agency is focused exclusively on telecommunications and information. The agency's expertise encompasses every aspect of telecommunications, including community networking applications, domestic policy, international policy, spectrum management, and telecommunications research and engineering.

With roughly \$73 million available for its activities, NTIA's workforce of approximately 290 full-time equivalent (FTE) employees works to promote the efficient and effective use of telecommunications and information resources in a manner that creates job opportunities, enhances U.S. competitiveness, and raises the standard of living.

The telecommunications and information revolution is bringing dramatic growth and change to the nation's economic, social, and political life. These exciting developments affect every American to some extent because nearly everyone uses telephones, televisions, computers, radio, and related technology. Citizens receive public services and protections that rely upon telecommunications technology. Communication is fundamental to the very organization of society and to life as it is lived today. Affordable access to telecommunications technology is becoming a basic necessity for a successful and productive life in all sectors of our society, including business, academia, industry, banking and government. The rapid growth and critical importance of the telecommunications and information industries will continue for at least the next decade, domestically and internationally.

Within the resources available to the agency, NTIA addresses the highest priority issues in telecommunications and information today, and maximizes the return on those resources by utilizing this expertise throughout its programs. Our analysts bring to their work an appreciation of the complexities of developing national policies, as well as the ability to draw on technical expertise to understand how those policies will facilitate or hinder development, and application expertise to gauge the impact on communities and individuals. This internal synergy is critical to NTIA's credibility and respect in the community; the agency's influence and advocacy record is a direct result of this synergy. NTIA's unique talents as an agency are readily apparent in the current Administration's record of accomplishments on a wide range of telecommunications issues, including universal service, the Telecommunications Act of 1996, global electronic commerce, Internet development, and digital broadcasting.

The Government Performance and Results Act (Public Law 103-62 of August 3, 1993), commonly referred to as GPRA, provided a guideline for NTIA's strategic planning activities in 1999. NTIA's vision, mission and the strategic goals and objectives that follow, guide the National Telecommunications and Information Administration in its unique role against the backdrop of an exciting, demanding, and promising future.

Vision:

NTIA envisions a world where telecommunications and information technologies are used to protect and improve the global quality of life.

Mission:

NTIA's mission is to promote the efficient and effective use of telecommunications and information resources in a manner that creates job opportunities, enhances U.S. competitiveness, and raises the standard of living.

GOALS AND OBJECTIVES 1999 -- 2004

NTIA's goals define the agency's priority efforts. The goals are not listed in any relative priority order. A further discussion of each goal and its objectives is presented below.

GOAL 1: Promote open markets and encourage competition.

GOAL 2: Ensure spectrum provides the greatest benefit to all people.

GOAL 3: Advance the public interest in telecommunications, mass media, and information.

GOAL 4: Promote the availability and sources of advanced telecommunications and information services.

The following is a report on the major activities and accomplishments associated with these goals in Calendar Year 1999.

GOAL 1: Promote open markets and encourage competition.

Activities under this goal include opening markets, increasing competitive choices, advocating more competition in the international satellite services market, advancing U.S. policy interests in bilateral, regional, and international fora, and assisting developing countries in strengthening their telecommunications infrastructures.

NTIA develops policies promoting greater competition in telecommunications and information markets. NTIA's policies in this area are necessarily intertwined with another important goal, that of promoting affordable access to services for all Americans. For more than a decade, NTIA has advocated State and Federal action to introduce and expand competition in all telecommunications and information services markets, particularly markets for local telecommunications services. Greater competition will lead to lower prices and more choices for consumers, as well as faster deployment of advanced telecommunications networks and services.

Competition in Telecommunications Markets

The Telecommunications Act of 1996 embodies that same pro-competitive philosophy. The market-opening provisions of the 1996 Act are stimulating the growth of competition for local exchange telecommunications services. For example, more than 140 companies are now providing local service in the 100 largest urban markets, as well as many smaller areas. Competitive local exchange carriers (CLECs) have attracted more than \$30 billion in capital and currently serve between 2 and 3 percent of all local access lines. Although competitors provide service predominantly via facilities acquired from

incumbent local exchange carriers (ILECs), CLECs are also aggressive in deploying their own switching and transmission equipment. One investment firm has identified the reasons for this proliferation of competition -- "the combination of access to low cost capital coupled with a clear regulatory and public policy initiative toward opening up local markets."

NTIA has been at the forefront of that policy initiative. Rulemaking proceedings at the Federal Communications Commission (FCC) to implement provisions of the 1996 Act continue to provide a forum for policy debate on these matters. For example, NTIA filed comments in an FCC rulemaking proceeding on local exchange competition. The 1996 Act sought to foster such competition by creating entry opportunities for new service providers. It did so by, among other things, imposing extensive "unbundling" obligations on incumbent local exchange carriers. Specifically, NTIA urged in its comments that the FCC reaffirm its list of seven network elements that ILECs must provide to competitors, upon request, on a nationwide basis: (1) local loops; (2) network interface devices; (3) local switching; (4) interoffice transmission facilities; (5) signaling networks and call-related databases; (6) operations support systems; and (7) operator services and directory services. NTIA agreed with the FCC that those requirements must be limited in scope and in duration. Moreover, NTIA concluded that in markets where the growth of competition has rendered enforcement of unbundling requirements unnecessary and, potentially, counterproductive, the FCC has the authority to forbear from applying the Act's unbundling provisions.

Pro-competitive policies are transforming the telecommunications marketplace into one in which consumers have an expanding choice of traditional telephone service providers as well as new service offerings, such as 900 services, wireless communications, Internet access, and broadband residential services. Consumers sometimes face bills with vague, misleading, confusing and even erroneous or fraudulent items. In a letter filed with the FCC in 1999, NTIA supported the FCC's efforts to ensure that customers know exactly what they are paying for. Consumers, for example, should have sufficient information to know whether their service has been "slammed" (switched without their authorization to a new long distance carrier) or "crammed" (charged for services not ordered or received).

Satellite Home Viewers Act

The Clinton Administration and NTIA have strongly supported the development of robust competition in the multichannel video programming marketplace as the way to bring greater viewing choices, lower prices and better services to consumers. In 1999, NTIA was involved in the legislative process surrounding passage of the Satellite Home Viewers Act, which affected the ability of satellite television subscribers to receive network television programming. NTIA's Institute for Telecommunication Sciences (ITS), working in support of policy staff, provided sample data on the number of households that could be affected by the various prediction methods that were under consideration by the FCC in 1999. NTIA filed a letter with the FCC presenting the results of the ITS work. While NTIA took no position on the specific definition that the FCC should adopt, it urged the FCC to adopt a definition and measurement that will best promote competition and consumer choice. Ultimately, at the end of 1999, Congress passed and the President signed legislation that clarified satellite television subscribers' ability to receive certain programming. This legislation will help increase competition between terrestrial cable television and satellite television providers.

Bilateral, Regional and International Fora

NTIA formulates and articulates policy alternatives for Executive Branch position on major international telecommunications and information issues, and promotes U.S. policies to improve the competitiveness of the U.S. telecommunications and information industries in international markets. NTIA continued to advance the adoption of pro-competitive regulatory policies by other countries to facilitate liberalized access to foreign telecommunications and information markets. NTIA actively participated in bilateral consultations with such diverse foreign counterparts as the European Union (EU) Commission, and various EU member countries, during which the Administration's telecommunications and information policies were advocated.

In a continuing effort to assist developing countries with efforts in privatization, liberalization,

policy-making, and creation of competitive and open telecommunications markets, NTIA assisted in interagency planning of a joint ITU-WTO seminar focused on these issues. In preparation for the WTO Seattle Ministerial, NTIA participated in several rounds of electronic-commerce negotiations, focusing on developing country issues. NTIA will actively participate in future WTO electronic commerce activities and in the upcoming GATS 2000 negotiations.

Additionally, via its work with other Executive Branch agencies, the FCC, and telecommunications industry, NTIA has promoted competition and liberalization in various International Telecommunication Union (ITU) fora. In particular, NTIA has been very active in promoting the U.S. policies in the development and standardization sectors of the ITU. Furthermore, NTIA has been active in the ITU Reform process currently underway. Following its 1998 ITU Plenipotentiary, the ITU established a committee of participating governments and corporations to explore further options for reform of the ITU. At the core of these deliberations is the issue of finding an appropriate role for corporations within an intergovernmental organization -- or whether the ITU should change its intergovernmental character.

These deliberations present difficult issues for the United States and NTIA, working in coordination with the State Department and other U.S. agencies as well as the corporate community, will attempt to identify solutions which ensure U.S. firms maximum global opportunity while seeking to prohibit any effort to expand the ITU's mandate into a more regulatory role, particularly with respect to the Internet.

During 1999, NTIA continued its longstanding support for reform of the international accounting and settlements system. Working closely with other agencies and U.S. industry, NTIA participated in the ITU Study Group 3 meetings and helped advocate for constructive reform of the outdated accounting rate system.

The ITU's Development Sector focuses on assisting developing and least developed countries. Through the work of its Study Groups, the Development sector is involved in Internet infrastructure deployment initiatives and e-commerce for development activities. NTIA is an active member in these activities of the Development Sector. Recently, NTIA was elected to spearhead work on new technologies for rural and remote infrastructure development. NTIA also is a member of a team focusing on best practices for Internet infrastructure deployment and partnerships with the private sector to facilitate infrastructure deployment.

Asia Pacific Economic Cooperation (APEC)

NTIA provided leadership and research to the Telecommunications Working Group (TEL) on several efforts. First was on APEC TEL's activities to promote early adoption of WTO liberalization commitments, fair interconnection regimes, and development of liberalization policy principles. Second was on TEL's efforts under the APEC Blueprint for E-Commerce. NTIA served on consultant review committees to develop a major report on E-Commerce usage among 3,000 small and medium-sized enterprises in the region. One major result was the identification of high telecom infrastructure access and usage costs as a barrier to E-Commerce usage among businesses, and between businesses and consumers. Third, NTIA contributed expertise to the policy battle raging around controversial, potential international Internet charging arrangements (ICAIS) between multinational carriers. NTIA along with an interagency team worked successfully with the ICAIS Task Force to focus group activities on differences between Internet and traditional telecommunications capacity, and the potential harmful effects of charging arrangements on the Internet's development. NTIA will continue to work with the ICAIS Task Force to develop policy recommendations, including support for non-interventionism, to APEC Telecommunications Ministers who meet in May 2000.

CITEL

During 1999, NTIA was an active participant in the Inter-American Telecommunications Commission ("CITEL") Permanent Consultative Committee I ("PCC-I") and in the Permanent Executive Committee of CITEL. NTIA's goals are to lend its policy expertise to promote telecommunications infrastructure buildout. NTIA also works with U.S. companies to promote their ability to provide communications goods and services, and to help meet the underdeveloped needs of the CITEL economies.

In advancing these goals within PCC-I, NTIA worked within the U.S. delegation and made recommendations on regulatory and policy matters, including electronic commerce, telemedicine/tele-education, and interconnection best practices. NTIA also contributed to the successful conclusion, during 1999, of an Inter-American Mutual Recognition Agreement for Conformity Assessment of Telecommunications Equipment ("MRA"). An MRA will benefit U.S. manufacturers by enabling domestic conformity assessment bodies to test and certify telecommunications equipment to the standards set by the importing country. NTIA was also appointed to lead a new GII Applications Rapporteur's Group to highlight and analyze the many ways that individuals, governments, and private industry are using the Internet and other advanced information infrastructures to provide innovative services and to create new business models in the region. Work in this Rapporteur's Group will begin in 2000.

Within the Permanent Executive Committee, NTIA worked closely with other country delegations to prepare revisions to the International Telecommunication Union's Americas Blue Book. The Blue Book serves as a general introduction to the regulatory policies and current telecommunications issues of the region. New chapters that covered Internet and IP Services and Trade in Telecommunications Services and Equipment were added to the book, with significant input and revisions by the U.S. delegation.

Organization for Economic Cooperation and Development (OECD)

NTIA has worked actively at the OECD to formulate international privacy policy. NTIA has helped to ensure that the OECD includes an emphasis on a multiplicity of privacy approaches, including private-sector-led approaches, and on the continued need for bridges between the different privacy approaches. NTIA has also participated in the critical effort of the United States and European Commission toward reaching an understanding on privacy protection with regard to personal data flows from EU countries to the United States.

China Telecommunications Summit (CATS)

In March 1999, NTIA successfully organized the second China-U.S. Telecommunications Summit (CATS). This Summit was the second opportunity to present the U.S. policy on the need for telecom and IT policy reform, while also promoting new market opportunities for U.S. companies. Of particular note is that 12 small- and medium-sized U.S. companies formed part of the delegation. The Chinese were pleased to find our smaller start-up companies can supply leading-edge technology in a competitive fashion.

NTIA organized the CATS Summit in conjunction with the International Trade Administration, the U.S. Embassy and several U.S. consulates in China, and the Telecommunications Industry Association. Secretary Daley and Minister for Information Industry (MII) Wu Jichuan opened the Summit. In all there were 325 participants, including senior MII officials, 16 Provincial Telecommunications Authorities (PTAs), 32 U.S. and 20 Chinese telecom and IT companies. Additionally, the Secretary attended a signing ceremony where the MII/Chinese Government approved of multiple U.S. contracts for wireless and basic telecom operations around China.

Other International Activities

NTIA was actively involved in the discussions and negotiations held by the Joint Government-Private Sector Committee of Experts on Electronic Commerce ("Joint Committee") established within the framework of the Free Trade Area of the Americas ("FTAA"). NTIA provided critical electronic commerce policy guidance to the U.S. delegation. NTIA served an important role in assuring that policy positions taken within the FTAA context reflect positions that the U.S. Government has taken in other international fora. NTIA also provided important guidance on potentially controversial electronic commerce issues, such as the domain name system, privacy, consumer protection, jurisdiction, telecommunications policy reform and liberalization.

NTIA has provided technical and policy expertise to ongoing U.S.-Japan Telecommunications

Deregulation negotiations, starting in May 1998. In March 1999, the USTR found Japan in violation of its WTO commitments to ensure a fair and competitive basic telecommunications market. USTR leads interagency discussions focused on Japan's interconnection and rights-of-way policies. NTIA provided experts on all matters, and provided liaison to state regulatory experts in response to Japan's concerns that U.S. state-level regulation hampers Japanese carriers' access to the U.S. market. Talks continue into 2000.

NTIA worked in conjunction with the ITA's Export Assistance Centers in Silicon Valley and U.S. Embassy in Australia to improve market access for U.S. telecom and Internet companies. Following the Asian economic crisis, many U.S. companies either withdrew completely from Asia, or sought to relocate their bases to Australia. NTIA also conferred with Australian start-up ventures, trade associations, users groups, and government officials, to help advance the adoption of E-commerce among businesses and consumers, under the auspices of the U.S.-Australia Joint E-Commerce Statement.

With U.S. Embassy in Seoul's assistance, NTIA and other telecommunications agencies reestablished relations with the Republic of Korea's telecommunications agencies through several meetings in Washington. The Ministry of Information and Communication seeks to create a CyberSociety by further liberalizing telecommunications markets, spurring more competition among Internet service providers, and establishing greater electronic links between schools, libraries, homes, and other social institutions.

NTIA provided technical and policy expertise to an ongoing investigation by an interagency team, led by USTR, of the Mexican telecommunications market. In July 1999, NTIA joined an interagency team to investigate and discuss with Mexican officials the issues U.S. companies face in entering and operating within the Mexican telecommunications market.

Through interagency efforts, NTIA has provided assistance to Cambodia, Jamaica and the Philippines in their efforts to draft new telecommunications legislation.

Privatization of Intelsat and Inmarsat

Since 1993, NTIA has worked with the FCC and the State Department to bring about the procompetitive privatization of the two principal intergovernmental satellite communications organizations – INTELSAT and Inmarsat. During 1999, Inmarsat completed its privatization having previously created a privatized spin-off, ICO Global, now publicly owned. In 1999, INTELSAT began the final process of its privatization and has set a target date for that privatization of April 2001. The INTELSAT and Inmarsat privatizations will be closely monitored by the Executive Branch and by the FCC to ensure that commitments for full market access in the United States are met.

GOAL 2: Ensure Spectrum provides the greatest benefit to all people.

The activities under this goal include developing spectrum plans and policies for both government and private sector users, satisfying the spectrum needs of Federal government agencies, advancing spectrally efficient technologies and improving the management of Federal and non-Federal spectrum to maximize the value of spectrum to society.

Managing the spectrum and making future spectrum plans require technical engineering expertise. This expertise is used to ensure that the spectrum policies and rules and regulations required for proper spectrum management nationally and internationally are technically valid; to derive the necessary technical facts that will lead to resolution of spectrum issues and problems; to provide a technical and engineering basis for future spectrum planning and standards; and to provide new ways to adopt new spectrum efficient technologies so the Federal government can use the spectrum efficiently and effectively.

Spectrum Authorization

NTIA assigns frequencies to radio stations owned and operated by the Federal Government, in accordance with authority delegated by the President. To fulfill the Federal Government's needs for access to the radio spectrum resources, NTIA's Office of Spectrum Management (OSM) has authorized 437, 313 frequency assignments for Federal agencies' use. There were approximately 75,000 Federal agency requests for assignment actions in 1999.

Spectrum support was certified for 62 planned Federal systems with a total investment cost of almost \$10 billion. Spectrum support certification is an Office of Management and Budget requirement for agencies of the Federal government. NTIA engineering staff work with sponsoring agencies to mitigate potential electromagnetic compatibility problems related to the introduction of new Federal systems into the radio-frequency environment. Examples of major systems receiving spectrum support certification in 1999 include the joint NOAA/DoD National Polar Orbiting Environmental Satellite System, the next generation of Global Positioning System satellites, the LANDSAT-7 Satellite System, a communications link for the Theater High Altitude Area Defense (THAAD) System, communications equipment for the Space Shuttle and International Space Station, the Mars Surveyor Orbiter mission, weapons control radars for the Air force's F-15 fighter aircraft, and a data link used by the Navy's F-18 aircraft for weapons control of the Tomahawk missile.

Automated Federal Spectrum Management System

NTIA continued to maintain and enhance the automated federal spectrum management system under a program begun in 1993 to provide a standardized, automated personal computer system for Federal agencies to select interference-free spectrum, submit applications for spectrum support, and validate that the spectrum requested is within the rules and regulations governing spectrum authorization. This new capability has been developed by DoD's Joint Spectrum Management Center (JSC) under the guidance of NTIA. NTIA and DoD are both funding various parts of the automated system called the Joint Spectrum Management System for Windows (JSMS_W). NTIA has conducted 25 JSMS_W training classes for almost 300 agency frequency management personnel from over 15 government agencies.

Interdepartment Radio Advisory Committee (IRAC)

The IRAC is comprised of representatives from the 20 Federal agencies that are major spectrum users and is an integral part of the spectrum management process. This committee provides advice to NTIA on spectrum management, resolution of various spectrum issues and problems among Federal agencies, between the government and non-government sectors through the FCC, and internationally through fora such as the ITU. The IRAC is chaired and administered by NTIA. The IRAC and its subcommittees and ad hoc groups conducted approximately 140 meetings and addressed over 3,262 Federal, non-Federal, and international spectrum management, policy, and planning issues and problems in 1999.

Spectrum Planning and Policy Advisory Committee (SPAC). The SPAC was established in 1965 to provide advice on spectrum matters. The Committee consists of 15 non-Federal members and 4 Federal members appointed by the Secretary of Commerce. In 1999, one meeting was held, and the SPAC provided engineering comments on recent spectrum legislation, the NTIA initiative for adjacent band interference, the potential impact of ultra-wideband systems and results from private efforts to monitor and control negotiations for relocations within the radio spectrum. The SPAC continues work on sensible spectrum management and change options for the frequency management community.

Public Safety Wireless Network and Federal Law Enforcement Wireless Users Group

The primary efforts of NTIA's Public Safety Program involved direct leadership, policy, and technical support to the Public Safety Wireless Network (PSWN) program and the Federal Law Enforcement Wireless Users Group (FLEWUG). The PSWN is a National Partnership for Reinventing Government Initiative charged with studying and designing the public safety communications network of the future. PSWN activities in 1999 included co-authoring and editing a number of program reports dealing with spectrum, interoperability, pilot projects, advanced technology, state and local partnerships, as well as guidance and advice in preparing filings to the Federal Communications Commission concerning current public safety issues. The FLEWUG is a member organization of Federal public safety agencies who

meet and deliberate issues relevant to federal public safety. The PSWN, as a program, supports much of the activity of the FLEWUG. Continued direct support to the PSWN and FLEWUG by NTIA is vital to ensure the efficient and effective use of spectrum resources in a shared and interoperable environment of the future. Public Safety standards help ensure interoperability among users and competition among equipment manufacturers.

Federal/State/Local Government Interoperability and Partnerships

Since the completion of the Public Safety Wireless Advisory Committee (PSWAC) effort in late 1997, NTIA has been working with other federal agencies and with State and local officials to enhance opportunities to partner with these public safety entities to accomplish common goals and share resources where practical. The State of Wisconsin provides an example of Federal Government partnering with State Governments in establishing shared and joint-use public safety telecommunications pilots. The State plans to establish a \$100 million statewide radiocommunications system to satisfy its public safety requirements. The State has agreed to let Federal government agencies that have operations within the State use this system as well to provide interoperability when needed. NTIA has agreed to provide spectrum resources on a temporary basis for this pilot experimental system. If this model of resource sharing works over the next several years, it could very well be a model for other states.

As was noted in the Public Safety Wireless Advisory Committee (PSWAC) Final Report, one of the more pressing public safety needs is for more spectrum for interoperability. To address the immediate need for interoperability spectrum for Federal, State, and local public safety agencies, the IRAC proposed that a number of channels in the 162-174 MHz band and the 406-420 MHz band administered by NTIA be made available during emergencies. This new interoperability plan provides radio frequencies for assignment to all Government agencies for intermittent law enforcement and public safety incident response operations. Non-Federal public safety agencies (i.e., State and local) may use the frequencies only in cooperation with agencies of the Federal Government. A total of 40 frequencies has been identified for such purposes. This interoperability plan is the first step in ensuring that sufficient radio spectrum is available when and where any emergency or public safety need may arise.

Public Safety Program Enhancement

As provided for in the FY 1999 budget, NTIA has been enhancing its public safety program staff to educate the public on Administration policies concerning public safety communications. Staff have lectured and spoken at a number of conferences, symposia, and fora including the Federal Wireless Users Forum Workshops, the Conference of the International Association of Chiefs of Police, the Public Safety Wireless Network Symposium, the PSWN Executive Council, the Department of Energy annual conference, the Forestry Conservation Communications Association, the Associated Public Safety Communications Officials' Annual Conference, the British APCO Conference, the State of Wisconsin State Police organization, the multi-jurisdictional SouthWest Border Initiative, the U.S. Telecommunications Training Institute, and the combined Department of Interior and Department of Agriculture annual conference.

National Coordination Committee

The FCC is in process of a rule-making to develop service rules for the newly allocated 24 MHz band of spectrum that was formerly TV channels 60-69. NTIA is working with the FCC to develop procedures in the licensing of this spectrum and to provide a means to establish interoperability among state, local and Federal governments. To this end, NTIA, along with the Departments of Justice, Treasury, and FEMA, has co-sponsored and is actively participating in the FCC's recently established Public Safety National Coordination Committee. The advisory committee objectives are to: (1) develop an operational plan to achieve national interoperability and (2) develop technical standards to achieve full interoperability and network integration. The work of the committee is to be completed by September 2000.

Strategic Spectrum Planning (SSP) Program

In 1999, the SSP Program continued its long-range spectrum planning effort by preparing a draft NTIA report addressing Radiolocation spectrum planning, coordinating with the FCC regarding spectrum use above 30 GHz, and completing a draft of the Federal Long-Range Spectrum Plan.

The Program worked with the IRAC's Spectrum Planning Subcommittee to draft the Federal Long-Range Spectrum Plan. This plan details the current and future spectrum usage of all Federal agencies, and lists unsatisfied spectrum requirements. The program published a draft U.S. Spectrum Plan that contains a forward-looking National Table of Frequency Allocations, and tables of current and planned spectrum use for both by the Federal Government and the private sector. The Plan covers the spectrum range from 30 MHz to 300 GHz. The Plan is now being revised to include the results of the 1997 World Radiocommunication Conference.

Program staff met for bilateral sessions with European spectrum managers twice during the year to exchange views on spectrum planning matters, and participated in the annual European Conference of Postal and Telecommunications Administrations (CEPT) Radio Conference.

Efficient Spectrum Technologies

To promote the efficient use of radio spectrum, and to advance spectrally efficient communication technologies, NTIA's Institute for Telecommunication Sciences (ITS) undertook research and engineering studies in coordination with NTIA's OSM to expand knowledge of radio spectrum occupancy and new communication technologies. Important results of this research were spectrum use concepts and models that led to more efficient industry and Government use of the radio frequency spectrum. ITS performed spectrum resource studies as required to ascertain current and future Federal use of the spectrum and determine where significant improvements in utilization appear possible. Additionally, ITS operated a mobile Radio Spectrum Measurement System (RSMS) to measure and analyze the actual use of the spectrum. This RSMS is used to perform measurements in multiple spectrum bands at selected sites, and to make other specialized measurements as necessary to ensure compliance with frequency assignment rules and regulations. ITS completed spectrum measurements in coordination with OSM at locations in Albuquerque, NM, Twentynine Palms, CA, New Orleans, LA, and the FCC laboratory at Columbia, MD. Measurements were performed to ascertain spectrum characteristics of high-power microwave transmitters used in war-fighting applications; emissions from high-power air-search and anti-ballistic missile radars; next-generation land mobile radio systems; and low-power, ultrawideband radar transmitters. Measurements were also performed during war games exercises at Ft. Irwin, CA, to determine the characteristics of spectrum use during land battles, and to determine the source of locally reported radio interference at that facility.

ITS also undertook research and engineering to support the development of new wireless technologies including wireless local area networks, third generation wireless (IMT-2000), broadband wireless access, digital broadcasting, smart antennas, and ultra-wideband communications. One key area of research was the measurement and modeling of the propagation of radio waves which are crucial for the planning, development, and deployment of wireless technologies. Such knowledge is also needed for effective spectrum management and policy development.

ITS supported the development of wireless local area networks through models of indoor propagation, validated by measurements, that enable the accurate prediction of broadband communication performance in indoor environments. These models provide a basis for planning antenna placement and designing modulation and coding techniques for achieving broadband capacity.

Measurements were made and analyzed by ITS to determine the benefit of antenna diversity for broadband cellular technologies such as third generation wireless. IMT-2000 systems will require more gain to achieve the broadband data rates desired. For narrowband systems, gain can be realized by using antenna diversity. The diversity gain possible for broadband signals was unknown. ITS results showed the dependence of diversity gain on signal bandwidth and will enable Government and industry to consider diversity gain in decisions on third generation wireless.

Broadband access to the Internet from the home and small businesses is of major importance to the

Administration and Congress. Broadband wireless access can, in addition, provide competition in the local loop (telephone service to the home). ITS continued to be the primary source of propagation measurement data and models for the broadband wireless access industry (local multipoint distribution service). Deployment of systems is beginning in the U.S. and a number of U.S. companies are exporting systems and services.

ITS developed fundamental data and more accurate modeling of radio propagation that will lead to improved methods of planning spectrum sharing for various services including advanced television (ATV) systems. ITS also provided technical support to policy makers in FCC rulemaking proceedings regarding ATV, low power FM radio stations, and the Satellite Home Viewers Act.

Adaptive or "smart" antennas are the most promising technology for enabling mobile broadband communications and for easing the spectrum shortage by increasing spectrum efficiency. ITS continued to develop its Advanced Antenna Testbed to support industry and academia in the development of smart antenna technology. Plans to apply the testbed were discussed with several universities and the National Science Foundation.

Ultra-wideband wireless communications is another new technology. Promoters claim that it will greatly decrease the cost of wireless communications, that it will make spectrum sharing very simple, and that it has other significant advantages such as increased security and reliability. ITS measured and modeled the spectral emissions of prototype ultra-wideband communication equipment developed by industry to help evaluate the compatibility of these new systems with existing spectrum users.

United States Telecommunications Training Institute (USTTI)

NTIA spectrum management experts, in conjunction with Motorola and ComSearch, successfully conducted a radio frequency spectrum management training seminar for 20 spectrum managers from 15 developing countries. The seminar was two weeks long and is conducted annually in Washington under the auspices of the United States Telecommunications Training Institute (USTTI). The seminar is an industry and government joint venture that provides free training to spectrum professionals and regulators from developing nations. The theme of the 1999 seminar was "Spectrum Management for the 21st Century." It covered basic spectrum management and computer-aided techniques, emerging new technologies, the development of commercial enterprises, and special topics in communications satellites and land mobile communications. NTIA experts also lectured on spectrum management to a group of senior government regulatory officials from Thailand, provided technical assistance and policy advice to the spectrum management regulatory agency of Panama, and provided a short spectrum management seminar to a delegation of regulatory officials from Chile.

In addition to its traditional activities with USTTI, NTIA's Assistant Secretary Gregory Rohde addressed a USTTI audience from eleven developing countries about the benefits of infrastructure development, advanced technologies and electronic commerce for economic development. The participants in USTTI's Electronic Commerce seminar were drawn from the eleven countries chosen in the first phase of the Internet for Economic Development Initiative.

Emergency Readiness Plan (ERP)

In 1999, NTIA undertook efforts to develop an electronic database on Federal use of the radio frequency spectrum under wartime emergency conditions. The priorities for each Federal spectrum-dependent system certified for use in a wartime environment were established by the end of 1999, following review and concurrence by the members of the IRAC Emergency Planning Subcommittee (EPS). NTIA will now proceed with completing the database and forward the final draft ERP for Use of the Radio Spectrum to the Director, Office of Technology Policy within the Executive Office of the President, for final approval. NTIA will issue a classified CD-ROM containing the complete ERP, including the certified database of wartime spectrum priority data. This plan and its associated database will be the basis for NTIA and the Federal government to exercise spectrum responsibilities during all types of emergency scenarios.

Omnibus Budget Reconciliation Act of 1993 (OBRA-93) and Balanced Budget Act of 1997 (BBA-97) Requirements

As a result of the requirements of OBRA-93 and BBA-97, NTIA identified 255 MHz of Federal spectrum for reallocation to the private sector to support growing spectrum needs for emerging telecommunications technologies. Because of complex spectrum sharing requirements, a number of follow-up actions are required by NTIA, in coordination with the IRAC and FCC. During 1999, NTIA undertook the following actions:

On behalf of the President, NTIA exercised the option to substitute the 4940-4990 MHz band for the originally identified 4635-4685 MHz band, the loss of which the Department of Defense stated would jeopardize national security. The letter effecting this substitution was sent to Congress and the FCC.

Based on inputs from affected Federal agencies, two associated NTIA spectrum reallocation reports indicated the estimated Federal costs to implement these reallocations to be in excess of \$1.5 billion. The magnitude of these estimated costs as well as the potential operational impact to Federal operations has continued to raise concerns among the affected Federal agencies. As a result of these concerns and other factors, Congress enacted a provision in the National Defense Authorization Act for Fiscal Year 2000 (Defense Act) to require completion of an interagency review and assessment of these and potential future reallocations of Federal spectrum. This project was begun during 1999 and is expected to be completed for delivery to Congress by October 1, 2000.

These laws did not make provisions for reimbursement to the affected Federal agencies for the direct costs associated with the reallocation process, which is estimated to exceed \$1.5 billion. To partially remedy this situation, Congress included a provision in the Defense Authorization Act to require, under certain conditions, that private entities gaining access to these bands through auctions shall compensate the affected Federal agencies. During CY1999, NTIA prepared draft procedures for implementation of these requirements, including a process for resolving any differences that arise between the Government and commercial licensees over estimates of associated relocation or modification costs. These procedures will be finalized in coordination with the affected federal agencies and with the Commission.

Global Positioning System Spectrum Harmonization Study

P.L. 106-79, including the accompanying House Report 106-371 directs the Department of Defense to initiate a spectrum harmonization study to be conducted by NTIA and to be delivered to the defense appropriations committees no later than January 31, 2000. During 1999, NTIA prepared a summary plan describing the tasks to be performed to assess the potential for interference to GPS receivers from the aggregate emissions from other transmitters. Based on the complexity and magnitude of the evaluation, analysis and testing to assess these other sources of interference and the GPS receiver susceptibilities, NTIA will complete a final spectrum harmonization study by January 31, 2002. The estimated cost for the NTIA's effort will be approximately \$2,000,000 over a two year period. NTIA will continue to work with Congressional and DoD staff to finalize the planning for this task.

Spectrum Measurement Activities

NTIA performed the following measurements under the management of NTIA's Institute for Telecommunications Sciences (ITS). These measurements were used to obtain the necessary technical information for subsequent application to spectrum issues and problems and to aid spectrum planning and the development of spectrum policy. The following measurements were completed in 1999:

Land Mobile Radio Emission Characteristics. Land mobile radio (LMR) emission characteristics measurements were performed on several analog and digital (TDMA and CDMA) transmitters. Unwanted emissions levels, non-harmonic and harmonic spurious, were determined to assess performance for compliance with emission limits required to ensure compatibility with the Global Positioning System (GPS). The measured data will be forwarded to the Technical Subcommittee of the IRAC for review of LMR spectrum standards.

Maritime Mobile VHF Channel Occupancy. Measurements were performed at several Coast Guard base stations in the New Orleans area to determine which VHF marine channels were clear. Channel occupancy of the marine channels, the interstitial channels and the vhf-high band commercial pagers were measured. The channel occupancy data was used to coordinate spectrum with existing users and to identify channels that the new Vessel Traffic Service Automatic Independent Surveillance (VTS AIS) system could use to ensure reliable coverage and performance. The study was documented in an NTIA Report, *Lower Mississippi River VTS Frequency Survey*, (NTIA Report 99-364).

Maritime Mobile VHF Receiver Performance Measurements. In March 1999, measurements were performed at the ITS laboratory on nine handheld VHF marine radios to evaluate their performance for compliance with receiver standards specified in International Electrotechnical Commission (IEC) 1097-9. This information was used to develop receiver standards for Radio Technical Commission for Maritime (RTCM) SC-117 and coordinated with the IEC. These results were documented in an NTIA Report, *Evaluation of Marine VHF Radios: Compliance to IEC Receiver Standards*, (NTIA Report 99-363).

High Power Radar Measurements. In April 1999, emission spectrum measurements were made on a high power radar at Kirkland AFB, NM. The measured data were provided to the Federal Aviation Administration (FAA) and the U.S. Air Force (USAF) to assess the need for special air traffic control requirements during testing of the high power radar.

Ultra-Wideband (UWB) Device Measurements. Part 15 compliance measurements were performed on a Time Domain, Inc. radar system at the FCC laboratory in Columbia, MD. These measurements were conducted to verify compliance with the waiver issued by NTIA for ultra-wideband systems. Also, methods of measuring the emission characteristics of UWB devices were studied to identify procedures for assessing compatibility with other services.

Federal Wireless Policy Committee

NTIA in 1999 continued its activities with the Federal Wireless Policy Committee, an inter-agency organization that encourages agencies to use commercially available wireless services and products by identifying agencies' requirements and providing a forum for government officials and industry representatives to meet. The Federal Wireless Policy Committee helped organize two Federal Wireless Users' Forums to discuss technology and regulatory issues.

Wireless Enhanced 911 Services

NTIA wrote a letter to the FCC in 1999 urging it to move forward with rules requiring wireless phone service providers to be able to locate callers who dial 911 in an emergency. NTIA, on behalf of the Administration, favored allowing commercial mobile service providers to determine the specific automated location technology they would use, but urged the FCC to establish and keep strict deadlines for implementation of these services in order to save lives.

Spectrum Management Fees

Congress passed P.L. 104-208, which specifies that Federal agencies shall pay fees charged by NTIA for spectrum management costs or cease using the spectrum. NTIA implemented the law in FY 97-99. The Federal agencies provided \$5.0 million in FY 97, \$7.5 million in FY 98, and \$12.9 million in FY 99. NTIA has requested a total of \$13.5 million in FY 00, which is 80 percent of the funds needed to sustain NTIA's spectrum management operations.

Spectrum Information Available to the Public

The OSM Web site was placed online in 1995 and consisted, at that time, of 13 pages and received approximately 50 visits per day. Today, the OSM Web site consists of 265 pages, includes the full text of 18 OSM reports, the full text of the NTIA Manual of Regulations & Procedures for Federal Radio Frequency Management, 15 Public Safety Wireless Advisory Committee (PSWAC) reports, and draft

proposals for the 2000 World Radio Conference. The OSM web sites receives over 100 visits per day. Over 80 percent of those visits come from non-Federal government sites. About 25 percent of the visits come from sites outside the U.S. The most frequently visited page is the one containing the U.S. Frequency Allocation Chart.

GOAL 3: Advance the Public Interest in telecommunications, mass media, and information.

Activities under the Public Interest goal include promoting universal service and access, assistance in maintaining and extending the services of public broadcasting and telecommunications facilities, promoting a diversity of choices in the mass media, encouraging private sector initiatives to give citizens the ability to protect their children from indecent material, facilitating private sector determination of the public interest obligations of broadcasters, establishing principles for the protection of personal privacy, and working to maintain the U.S. telecommunications and information infrastructure in time of crisis. NTIA continues to provide assistance to public broadcasting stations which provide "over-the-air" service to more than 95 percent of the U.S. population. NTIA is also helping public television stations convert their facilities for digital broadcasting.

NTIA develops policies in many areas that promote the public interest. One is in telecommunications services, where NTIA's policies promote universal, available and affordable services for all Americans. Another is in considering policies for the development of the Internet and other advanced services. NTIA also works to promote the public interest in the nation's mass media, including new digital television services.

The Digital Divide

One of the top priorities of the Clinton Administration is to ensure that basic and advanced telecommunications services are available to everyone and at affordable prices. The "digital divide" separates those who have access to telecommunications - - through telephones, computers and the Internet - - and those who do not. In July 1999, President Clinton and Secretary Daley released *Falling Through the Net III: Defining the Digital Divide*. The "Falling Through the Net" report series uses Census Bureau data to determine which Americans have access to telephones, computers, and the Internet, broken down by region, income, race, age, and other factors. These reports provide a principal foundation and justification for Clinton Administration telecommunications policies and a solid empirical foundation for policymakers and others throughout government and the private sector. As the United States takes steps to close the digital divide, there needs to be a measure of our progress. The reports in this series provide such a measure. The data collected is an important metric that helps gauge the extent to which Americans are universally able to access the fruits of the Information Age. The demand for this report series is evidenced by the worldwide print, radio, and television coverage that accompanied the 1999 release. It has helped focus attention on the Administration's efforts to close the digital divide.

In December, 1999, NTIA organized a summit on closing the digital divide. Led by Secretary Daley, the summit focused on expanding access to information technologies for underserved populations and areas. Summit participants from the federal government, technology industry, civil rights and non-profit communities, grassroots community organizations, and the general public examined public and private initiatives to close the technology gap and discussed how to expand and coordinate these efforts. As a result of the Summit, NTIA created a web site at <http://digitaldivide.gov> to provide a central resource for federal government information on closing the digital divide. NTIA also commenced the conduct of research on broadband access policies in overseas markets, and began efforts to disseminate foreign digital divide activities through the new Digital Divide website.

E-Rate and Protecting Children

NTIA in 1999 continued its activities with respect to the "E-Rate," which provides assistance to schools,

libraries, and other non-profit organizations in accessing advanced telecommunications services. The E-rate program and other educational technology initiatives are transforming our nation's classrooms and libraries. Today, 51 percent of public school classrooms are connected to the Internet, up from 27 percent in 1997 and 3 percent in 1994. Some 25,785 schools, school districts, and libraries in 1999 received \$1.66 billion to help pay for internal wiring and discounted connections to the Internet.

In May 1999, NTIA filed a letter with the FCC, commending it on behalf of the Clinton Administration for completing the first funding cycle of the E-rate program. NTIA noted, however, that as increasing numbers of children have access to the Internet from their schools and neighborhood libraries, these children must have positive, age-appropriate, educational online experiences. With respect to the issue of children's access to online material that their parents and teachers deem to be inappropriate for them, the Administration advocated a user-empowerment approach. Schools and libraries are today using a wide range of technology tools and monitoring techniques to ensure that children do not encounter inappropriate material and dangerous situations while online. NTIA stated that, absent proof that local decision making is not working to protect children, the federal government should not mandate a particular type of technology, such as filtering or blocking software. Rather, we should encourage "acceptable use" policies by all public institutions that offer access to online resources, including the Internet. An acceptable use policy, NTIA said, should offer reasonable assurances to parents that safeguards will be in place in the school and library setting that permit users to be empowered to have educational experiences consistent with their values. NTIA also stated that the FCC can help promote this policy by adopting a requirement that all schools and libraries that receive Federal E-rate funds certify that they will implement acceptable use policies before such funds are awarded to them. This would be an important improvement in the program and provide a critical protection for our children.

Broadband Telecommunications Networks and Services

NTIA has been at the forefront of the Administration's efforts to facilitate the development of broadband networks and services. The agency has proposed and supported policies that would make it easier for new competitors to enter the market and offer advanced broadband services. NTIA has also recommended regulatory changes that would enable incumbent local telephone companies to provide such services on a less-regulated basis, subject to safeguards to protect competition. NTIA has also explored whether and to what extent universal service policies may need to be changed to ensure affordable access by all Americans to broadband services.

Throughout 1999, NTIA actively participated in FCC proceedings on broadband issues. NTIA presented its position in three letters filed with the FCC. In one, NTIA favored an FCC ruling that would make it easier for local telephone companies to sell digital subscriber line (DSL) services to Internet service providers (ISPs). In a second letter, NTIA suggested conditions under which local telephone companies could be allowed to offer DSL services on a less-regulated basis. The letter also proposed changes to the FCC's collocation practices that would allow new entrants to provide competitive DSL services more quickly and at less cost.

Finally, NTIA advocated an FCC ruling that when DSL services are used to access ISPs and the Internet, those services are interstate offerings subject to exclusive FCC jurisdiction.

In another letter, NTIA articulated principles that should guide the FCC in conducting the broadband inquiry mandated by section 706 of the Telecommunications Act of 1996.

Broadcast Ownership Diversity

The expanding multimedia marketplace includes terrestrial broadcasting, cable television, satellite broadcasting, cable multipoint multichannel distribution service (MMDS), open video systems (OVS), and emerging video and audio media via the Internet. These many services offer the potential for greater competition, diversity of ownership and viewpoints, and localism.

NTIA has been an active participant in the FCC review of the structural broadcast ownership rules that seeks to assure that greater viewpoint diversity and competition accompany the introduction of new

mass media platforms. In February 1999, for example, NTIA wrote a letter to the FCC offering NTIA's comments on these issues. NTIA urged the FCC to act decisively to preserve the core principle of viewpoint diversity embodied in the First Amendment as well as the fundamental values of localism and competition.

Community Development and Telecommunications

In September 1999, NTIA and the Community Development Innovation and Infrastructure Initiative (CDII) joined to host a conference, "Community Business and Economic Growth Through Telecommunications." The CDII is a national research project on the future of community development and community development finance that is funded by a number of major foundations and financial institutions. The conference brought together community economic development organizations, community-oriented lenders and investors, and representatives from large and small telecommunications companies. The primary purposes were: 1) to provide sufficient information on the telecommunications industry to encourage community-based entrepreneurial projects; 2) to identify business lending and equity investing opportunities in small support businesses in the telecommunications industry; and 3) to bring together representatives of the telecommunications industry, the financial community, and entrepreneurs for simultaneous training, information sharing, and networking.

Public Telecommunications Facilities Program (PTFP)

NTIA's PTFP assists in maintaining and extending the services of public broadcasting and telecommunications facilities, including the conversion of public television to digital broadcasting. The program annually awards grants to public broadcasting and other noncommercial entities for the purchase of, or in some cases to plan for the eventual purchase of, telecommunications equipment. In 1999, PTFP issued grants totaling approximately \$21.7 million for 99 projects in 42 states and U.S. territories. The grants enable public broadcasting organizations, as well as many nonbroadcast operations, to buy equipment to activate new services, to extend the range of present services, and to improve existing broadcast facilities.

In 1999, PTFP awarded 38 public radio grants, 51 public television grants, 9 distance learning grants, and one grant to the University of Hawaii for the Pan-Pacific Educational and Cultural Experiments by Satellite (PEACESAT) Project. Ten of the radio awards will extend a public radio signal to approximately 173,000 persons who presently do not receive any signal. Communities receiving new service include Grand Canyon Village, AZ; Mojave, CA; Cape May, NJ; Jackpot, NV; and the Shoshone-Paiute Tribes of the Duck Valley Reservation, NV. The other radio projects are intended to preserve existing service to listeners. For example, an award to Nebraska Educational Telecommunications will replace the radio antennas at four stations which serve about one third of the state.

Eight of these awards will allow public television stations in Dallas, Detroit, Los Angeles, Pensacola, Phoenix, St. Paul, San Diego and Trenton to initiate their conversion to digital broadcasting, per FCC requirements. Thirty awards for equipment replacement projects will assist public television stations with the purchase of digital-ready or digitally compatible equipment. For example, equipment replacement grants include awards made to purchase seven digital capable transmitters in five states.

PTFP also has been a source of federal funding for catastrophic loss and urgently needed replacement equipment. Communities hit by hurricanes, fire, wind storms, or earthquakes often would be without public television and radio if it were not for the program. In 1999, for example, NTIA awarded a grant to replace a microwave interconnection serving the public television station in Ponce, PR after the microwave was destroyed by hurricane Georges.

Advanced Telecommunications for Disaster Warnings

In 1999, NTIA participated in an inter-agency working group organized under Vice President Gore's National Performance Review. Through that process, NTIA helped bring together federal government officials involved in fields including weather forecasting and disaster management, with private sector

telecommunications firms, to develop alternative means of delivering weather and other disaster warnings using modern telecommunications technologies, such as advanced television receivers, wireline and wireless telephones, and the Internet.

Critical Infrastructure Protection

The Secretary of Commerce has assigned NTIA to fulfill the lead agency responsibilities for the information and communications sector under the Critical Infrastructure Protection Program (CIP). CIP was formally initiated when the President issued Presidential Decision Directive 63 (PDD-63) in May 1998. In addition to its lead agency responsibilities, NTIA will also be performing telecommunications research activities specifically designed to further CIP objectives. Both the CIP lead agency and research form a major new body of work that may grow substantially in future years, subject to the availability of funds. Organizationally, this work will be done through NTIA's Office of Spectrum Management and Institute for Telecommunication Sciences.

GOAL 4: Promote the Availability and Sources of Advanced Telecommunications and Information Services.

Activities under this goal include demonstrating advanced, innovative applications of telecommunications and information technology in the non-profit and public sectors, promoting the growth of electronic commerce and Internet use domestically and internationally, meeting the compelling telecommunications research needs of other Federal agencies and industry through cooperative research and development, promoting international acceptance of U.S. spectrum proposals, and participating in ITU and domestic standards development to benefit U.S. industry and user interests.

Technology Opportunities Program (TOP) [formerly known as the Telecommunications and Information Infrastructure Assistance Program (TIAP)]

TOP promotes the widespread use and availability of advanced telecommunications and information technologies in the public and non-profit sectors. By providing matching grants for information infrastructure projects, this program helps develop a nationwide, interactive, broadband information infrastructure that is accessible to all Americans, in rural as well as urban areas. TOP plays a central role in the Administration's efforts to close the digital divide.

TOP provides matching grants to non-profit organizations and state and local governments across the United States to demonstrate advanced, innovative applications of telecommunications and information technology. These grants provide critical seed money to help forge partnerships in local communities across the country, ensuring that telecommunications technologies live up to their potential by enhancing community services, health care delivery, public safety, and education and lifelong learning.

In 1999, forty-three public and non-profit institutions, competitively selected from more than 700 applicants, were awarded \$17.6 million in federal grants. Projects were selected on the basis of their ability to serve as models that can be replicated by similar organizations across the country. The grants were awarded in five categories; some examples of the awards include:

Education, Culture and Lifelong Learning. The New Hampshire Community Technical College will use computers to establish two-way links between educators and local businesses to offer remedial education as well as computer classes to people who are considered the "working poor";

Public Services. Second Harvest, a project in Chicago, Illinois, will use a nationwide computer network of local food banks to more effectively distribute food to areas with the greatest need;

Health. The Shepherd Center in Atlanta, Georgia will use a high-speed Internet test bed to provide rehabilitation services to patients who have sustained catastrophic spinal cord and brain injuries, their

family members, and care givers;

Public Safety. The Fund for the City of New York will create a shared network among juvenile offenders, their parents, caseworkers, and social service providers to promote youth development; and

Community-Wide Networking. The Philadelphia Enterprise Center in Pennsylvania will develop an Interactive Business Network to increase enterprise development and entrepreneurship in inner-city West Philadelphia.

Since the TOP program was initiated in 1994, NTIA has awarded more than \$135 million in matching funds that has spurred nearly \$330 million in total investments. Appendix A contains a listing of the 43 grants awarded in 1999.

TOP also expanded its educational mission beyond U.S. borders in 1999, to share experiences with overseas policy-makers and practitioners. In June 1999, TOP conducted a full-day workshop on the international implications and lessons learned from U.S. applications in community networking, healthcare, public safety, and education. In November 1999, TOP conducted an international outreach panel as part of its successful "Networks for People" conference, to include panelists from the World Bank, U.S. AID, and several private sector entities.

Children and Computers Report

In 1999, NTIA released *How Access Benefits Children: Connecting Our Kids to the World of Information*, the fourth in a series of reports that tracks the impact of telecommunications and information technology on Americans today. The report describes how young people across America are using the Internet and other information age tools to connect with and enrich their communities.

Grant Evaluations

NTIA contracted with Westat, a research and consulting firm, to survey the 206 TOP projects awarded in 1994 and 1995. Westat also did in-depth case studies on a sample of 24 projects from 1994-1995. The study, conducted during the summer of 1998, is the first evaluation report in NTIA's ongoing effort to collect and share the lessons learned by the TOP grant recipients. The study's key findings, which were reported in February, 1999, are highlighted below.

Ninety percent of the projects are still in operation. The majority of projects reported meeting or exceeding nearly all of their objectives. Most important, the projects are sustaining themselves beyond the federal grant period.

Each grant dollar generated another four dollars to support information infrastructure. In addition to non-federal matching funds, the grants led to investments that expanded their services beyond the original scope and further investments to support spin-off activities.

Model projects and extensive outreach are effectively encouraging the use of innovative information technology. The 206 organizations alone reported responding to 79,000 unsolicited requests for information and hosted visitors representing over 5,000 organizations.

The grants are bringing communities together. On average, each grant recipient worked with 3.4 partners. Sixty percent of the projects collaborated with private sector organizations. In addition, a number of projects reported new joint ventures that were direct outcomes or spinoffs of their TOP grants.

The projects focused on underserved communities. Sixty-five percent of projects involved end users in rural areas, while 48 percent of projects reported involving end users in the inner cities. Fifty-nine percent reached end users living in extreme poverty and 42 percent involved end users with disabilities.

The grant funds made the difference. Seventy-five percent of grant recipients reported that their projects

never would have happened without the TOP funds. Of the remaining 25 percent, 90 percent indicated that, without TOP support, the projects would have either reached significantly fewer people, or have been substantially delayed, or dramatically reduced their range of services.

Twenty-four case studies and a summary of findings also were published.

In October, 1999, Westat completed additional case studies of twelve TOP projects funded in 1996. The case studies were selected in part to study three particular subjects: (1) issues particular to rural communities; (2) issues particular to urban communities; and (3) challenges in sustaining information technology-based projects. The case study report gives evidence of the special challenges that these twelve TOP projects faced and provides information for a better understanding of factors that can facilitate the success of such projects.

E-Commerce/Internet Issues

The Internet for Economic Development Initiative

The Internet for Economic Development Initiative (IED) is designed to increase Internet access and use in developing and least developed countries (LDCs). It is chaired by the Vice-President's office, and jointly led by the State Department and the U.S. Agency for International Development. This initiative is directed at assisting developing countries in four major areas: (1) encouraging the creation of pro-competitive policy and regulatory environments where the Internet and E-Commerce can flourish (2) spurring the deployment of advanced information infrastructure to under-served areas (rural, remote and urban) through collaboration with multinational organizations, NGOs and the private sector (3) providing education and training to local entrepreneurs, knowledge-workers, policy makers and regulators and (4) fostering the use of specific Internet applications such as micro-e-commerce, telemedicine, distance learning, and to facilitate improved access to government services. NTIA has been a critical player in both the development and implementation of this initiative from its inception. In addition, NTIA participated in the first IED infrastructure assessment in Morocco and participated in an electronic commerce seminar for the Southern African Development Community's (SADC) WTO Ministerial preparations in Tanzania. The first phase of the IED selected eleven developing and least developed countries (LDCs). Those countries are: Bulgaria, Egypt, Ghana, Guatemala, Guinea, Haiti, Jamaica, Morocco, Mozambique, South Africa and Uganda (additional countries will be added as the project develops). NTIA will continue to play an active role in this important initiative.

On Line Privacy/Profiling Workshop:

With the rapidly increasing use of the Internet, developing effective approaches to ensure consumers' privacy rights are not compromised is a critical challenge. Increasing awareness and understanding of how on-line practices such as profiling work is essential for consumers to exercise choice as to how much information they would like to provide, to whom and for what use. NTIA is working to raise awareness and understanding of the privacy and business concerns related to on-line practices such as profiling and to find innovative approaches to address those concerns. These approaches optimally allow consumers to maintain their flexibility to tailor their Internet use to meet their own personal preferences. In addition, these approaches contribute to a regulatory framework that will encourage the phenomenal growth of the Internet and electronic commerce.

In July 1998, Vice President Gore asked the Department of Commerce to work with the Federal Trade Commission to encourage companies that build dossiers (profiles) about individuals by integrating information from a variety of database sources to implement effective self-regulatory mechanisms. On November 8, 1999, NTIA and the FTC hosted a well-attended workshop to explore online profiling. The workshop included sessions that looked at profiling technologies, their effect on the privacy of Internet users, and industry's current self-regulatory efforts to develop privacy protections for on-line consumers. A FTC report to Congress on the workshop with input from NTIA and recommendations is being developed and will be submitted in the Spring of 2000. NTIA has an active role in this process and is committed to working with consumers, privacy advocates, other government agencies and industry to address issues and to find effective approaches to protecting privacy on-line. Raising awareness of issues

and concerns is not sufficient. NTIA is currently working with industry leaders to develop effective self-regulatory approaches. These approaches include websites posting enforceable privacy policies which cover the fair information protection principles of notice, choice, access and security with regular third party audits of their adherence.

Consumer Protection in Electronic Commerce

In 1999, NTIA worked in a number of national and international fora to fulfill the President's mandate to promote consumer confidence and ensure effective consumer protection in the global electronic marketplace. NTIA provided policy guidance to enhance the negotiations on Guidelines for Consumer Protection in the Context of Electronic Commerce, worked with the private sector to begin implementation of these Guidelines, worked with an inter-agency team to plan a Spring 2000 workshop regarding alternative dispute resolution for online transactions, and coordinated with the APEC Electronic Commerce Steering Committee to develop a one-day seminar scheduled in mid-2000 regarding consumer protection in the online environment.

Internet Domain Name System

In 1999, NTIA made great strides towards fulfilling the goals of the President's 1997 directive to privatize and increase competition and global participation in the management of the Internet domain name system. On November, 25 1998, NTIA entered into a Memorandum of Understanding with the Internet Corporation for Assigned Names and Numbers (ICANN) to work collaboratively on the transition of domain name system (DNS) functions to the private sector. As a result of this collaboration, the private sector, through the ICANN process, has made tremendous progress in establishing representative, bottom-up procedures contemplated in the in the Administration's statement of policy (or White Paper) issued in June, 1998. During 1999, ICANN completed its organizational structure, accredited more than seventy new domain name registrars to provide competitive registration services in the .com, .net, and .org domains, and completed its first round of elections for its board of directors, among other accomplishments.

Further, in 1999, NTIA, with the National Institute of Standards and Technology (NIST), entered into an Cooperative Research and Development Agreement (CRADA) with ICANN to increase the security and stability of the Internet root server system. As part of this agreement, ICANN successfully ensured that the root server system was in compliance with Year 2000 (Y2K) requirements.

On November 10, 1999, NTIA, working closely with other Department of Commerce offices and agencies, successfully reached and executed a series of agreements between the Network Solutions, Inc., the company that has managed certain aspects of the domain name system on behalf of the U.S. Government since 1992, ICANN and the Department of Commerce. These agreements, which were necessary to facilitate a smooth transition of DNS functions to the private sector, resulted in significant gains for the United States, including:

- A reduction in the wholesale price of a domain name to \$6 per year;
- Increased flexibility for consumers to chose among a number of different domain name registration services providers and determine the length of a domain name registration;
- Insured availability of domain name registration data vital to third parties that wish to create new and innovative value added services, while prohibiting the use of the data to enable the transmission of mass unsolicited commercial solicitations via e-mail (spam);
- Increased protection against cybersquatting (the practice of deliberately registering a domain name in violation of an entity's trademark) by requiring all domain name registrars to ensure adequate receipt of payment for a domain name at the time of registration;
- The use of the "InterNIC" website as a public information resource that provides users with domain name registration information, including a directory of all accredited registrars.

Over the next year, NTIA will work closely with ICANN to ensure that the transition to private sector management is completed in accordance with the Administration's principles for DNS management: stability; competition; private, bottom-up coordination; and representation.

Cooperative Research and Development

The Federal Technology Transfer Act of 1986 (FTTA) allows Federal laboratories to enter into cooperative research agreements with private industry, universities, and other interested parties. The law was passed in order to provide laboratories with legal authority to enter into these arrangements and thus encourage technology transfer from Federal labs to the private sector. ITS established a core telecommunications research expertise that is accessible to both the public and private sectors and is actively engaged in technology transfer and commercialization efforts by fostering cooperative telecommunications research with industry where benefits can directly facilitate U.S. competitiveness and market opportunities. Through cooperative research and development agreements (CRADAs) with industry, ITS applies its expertise to practical problems in telecommunications today. ITS completed several CRADAs with the private sector (e.g., U S WEST Advanced Technologies, Inc., Hewlett-Packard, American Automobile Manufacturers Association, GTE Laboratories, Integrator Corporation, Industrial Technologies, Inc., Lehman Chambers, ARINC) to design, develop, test, and evaluate advanced telecommunications concepts. Data derived from these CRADAs provided a foundation for domestic and international standards development and efficient allocation of radio frequency spectrum resources. To date, major contributions to personal communication services (PCS) and local multipoint distribution service (LMDS) technologies have been and will continue to be carried out under these CRADAs to aid U.S. efforts to rapidly introduce new communications technologies for the benefit of society.

A CRADA was initiated in FY 1999 with Lucent Bell Laboratories. ITS conducted measurements on its patented, advanced antenna technology (BLAST). The technology allows the communication of several-fold more information in a given bandwidth than was previously possible. It enables broadband communications in a narrowband channel in cluttered environments. The measurements enabled Bell Laboratories to test the limitations that real world manufacturing places on the theoretical capabilities of BLAST technology. In FY 1999, ITS also began receiving royalties from a CRADA partner for products sold using an ITS-patented technology to objectively determine, through computer software, the quality of voice signals. Cellular telephone service providers are using the products to maintain the quality of service in their networks.

ITS also supports the mission of other Federal agencies through reimbursable work agreements. These efforts support a key NTIA responsibility of making available its laboratory's telecommunications expertise to other Federal agencies in a centralized, cost-effective manner.

The Columbine High School shootings re-enforced the need for local, state, and Federal public safety officials to be able to communicate more effectively with each other during emergencies. Such interoperability is a high priority for the Department of Justice which initiated the Advanced Generation of Interoperability for Law Enforcement (AGILE) program. In FY 1999, ITS worked under the AGILE program to develop the plan and began implementing efforts to develop standards to provide telecommunications interoperability. This work was conducted through the NIST Office of Law Enforcement Standards through which ITS has been addressing law enforcement needs for telecommunication standards for a number of years.

ITS has also made technical contributions to the NTIA Public Safety program. In particular, ITS initiated efforts to develop the standards to be used to network public safety radio base stations together. This technical effort is being led under the auspices of the Telecommunication Industry Association's Project 25 and the Department of Justice.

ITS continued its long history of assistance to multiple Department of Defense agencies. In FY 1999, much of this work was of a sensitive nature. Contributions of import include assistance in determining the security challenges posed by rapidly emerging new telecommunication technologies; analysis for evaluating the threat of radio frequency weapons and the vulnerability of the Nation's telecommunications infrastructure to attack; and analysis to assist in the application of electronics and communications to enhance combat effectiveness.

ITS also provided key technical support to the work of the Federal Railway Administration in improving railway traffic management and safety and to the National Communications System in enhancing communications survivability during national emergencies.

ITS continued its efforts to make technology results easily available to the larger user community. One way is through our Telecommunication Analysis Services (TA Services) program, an Internet service that currently reaches over 200 Government and private sector users across the Nation and makes available the latest models and tools developed by ITS in the telecommunications field. The service is available through web-based electronic CRADAs. It makes the latest models (e.g., PCS propagation) available to telecommunications systems planners and designers. ITS will continue these efforts in 2000 and beyond.

International Telecommunication Union

Through its participation in international fora, NTIA ensures that U.S. spectrum requirements are satisfied on an international basis. These fora include the International Telecommunication Union (ITU), the Commission on Inter-American Telecommunications (CITEL), and the International Special Committee on Radio Interference (CISPR).

The ITU, a specialized agency of the United Nations, has 188 Member States, including the United States. NTIA, the State Department and the FCC participate in the ITU via plenipotentiary conferences, radio conferences, technical study groups, and other fora.

1998 Plenipotentiary Conference. NTIA played a key role in the preparations for this conference and in the work of the U.S. delegation at the conference. NTIA, with the advice of the Radio Conference Subcommittee (RCS) of the Interdepartment Radio Advisory Committee (IRAC) developed coordinated federal agency views on a variety of issues including the structure, budget and strategic plan of the ITU.

World Radiocommunication Conference 2000 (WRC-2000). NTIA began its preparations for this conference immediately after the close of WRC-97. The NTIA and the FCC continued their previously established joint processes for the development of draft U.S. proposals for world radiocommunications conferences. NTIA prepares proposals representing federal government agencies through the RCS. The FCC prepares nongovernment proposals through its WRC-2000 Advisory Committee. NTIA, through the RCS, approved preliminary views on most of the agenda items for the conference. This represents the first time that the U.S. has put forth its views in an official form so early in the conference preparation process. Furthermore, NTIA and the FCC developed draft U.S. proposals for WRC-2000 agenda items. Key issues for this conference includes spectrum for 3rd generation wireless, protection of Global Positioning System (GPS) operations, and sharing between nongeostationary and geostationary fixed satellite service systems.

Technical Study Groups. NTIA contributes to the work of the ITU Radiocommunications Sector study groups by participating in U.S. preparation activities of the State Department International Telecommunication Advisory Committee (ITAC), which is organized to "mirror" the ITU, and through participation on the U.S. delegations to study group and sub-group meetings. During 1999, NTIA provided chairmen and led U.S. delegations for Study Group 1 (spectrum management), Working Party 1A (spectrum engineering), WP1B (spectrum sharing), Task Group 1/5 (unwanted emissions), Task Group 1/6 (coordination areas around satellite earth stations), Study Group 3 (radio propagation), Joint Rapporteur Group 8A-9B (fixed wireless access), and Study Group 9 (fixed service). Furthermore, NTIA coordinated many of the preparations and led the U.S. delegation to Working Party 8D (mobile-satellite and radio-navigation satellite). These study groups are essential to laying the technical ground work for radio conference agenda items as well as developing recommendations to solve important technical issues of concern to the international community.

ITU and Domestic Standards Development

ITS continued to provide leadership, technical contributions, and advocacy of U.S. Government and industry proposals in the ITU-T, ITU-R, and related national telecommunication standards committees

during 1999. The Institute's ITU-T work promotes competition, innovation, and international trade in telecommunications equipment and services through standardization of network performance and user-oriented Quality of Service (QOS) metrics. During 1999, this work was focused in two ITU-T groups: Study Group 13 Working Party 4, which develops performance Recommendations for high-speed synchronous digital hierarchy (SDH), broadband integrated services digital network (B-ISDN), asynchronous transfer mode (ATM), and Internet protocol (IP)-based technologies, and Study Group 12 Working Party 2, which defines end-to-end transmission performance parameters and objectives for voiceband networks and terminals. ITS leadership in Study Group 13 contributed to the completion and approval of two new ITU-T Recommendations (IP packet transfer and availability performance, B-ISDN call processing performance) and two revised Recommendations (error performance, timing and synchronization performance in broadband transmission networks) during 1999. ITS participants also initiated new ITU-T work on standardization of QOS objectives for voice over IP (VoIP) and other real-time IP services, and continued leadership of the ITU-T Video Quality Experts Group, which is conducting a comprehensive, multi-laboratory evaluation of proposed video quality assessment technologies proposed for international standardization. Finally, ITS provided leadership and technical contributions in the American National Standards Institute (ANSI)-accredited T1 (Telecommunications) Committee's T1A1 (Performance) Subcommittee, whose activities strongly support ITU-T performance standardization goals.

The Institute's ITU-R work provides a technical basis for spectrum allocation decisions and spectrum use both globally and regionally, and helps to ensure compatibility between radio systems operated by U.S. government and industry organizations and those operated in other countries. During 1999, ITS spearheaded ITU-R Study Group 3 efforts to advance existing radio wave propagation, noise/interference, and coverage prediction techniques to substantially better levels of accuracy and resolution. Institute staff members obtained the National Geophysical Data Center (NGDC) 1-km worldwide terrain database from the National Oceanic and Atmospheric Administration (NOAA) and successfully introduced the database for international use. ITS led ITU-R development of algorithms for extracting path profiles from such terrain databases; contributed to the enhancement and use of the Okumura-Hata model, which provides coarse estimates of excess path loss due to land use/land cover (e.g., vegetation, buildings); and began the development of more precise land use/land cover models derived from multiple photographic images of target areas (e.g., cities). These models will be widely used in the design of radio systems where line-of-sight paths are required (e.g., LMDS). Finally, ITS led the development of a new ITU-R Handbook that will guide users in the application and interpretation of propagation calculations used in the land mobile radio service.

In addition, ITS continued telecommunications research and engineering activities directed toward the development, implementation, and promulgation of user-oriented performance measures for integrated data, audio (including voice), video, and multimedia communication equipment and services. ITS continued to utilize its state-of-the-art integrated networks test bed and performance measurement laboratory to validate and optimize telecommunication performance standards. This research is aimed at developing user-oriented, technology-independent performance parameters and measurement methods for digital audio and high-speed data communication services. ITS continued related research in digital video communication performance supporting such emerging and future applications as video telephony and teleconferencing, computer-aided design and manufacturing, e-commerce, and interactive video distribution, and is continuing to integrate its prototype data, audio, and video performance measures to provide multimedia test capabilities. These user-oriented test capabilities are extremely valuable in implementing and optimizing the national and international information infrastructure, including the Next Generation Internet (NGI).

NTIA Silver Medalists

The Department of Commerce Gold and Silver Medal awards program provides an opportunity for the Department to acknowledge those employees whose accomplishments warrant special recognition. Staff from NTIA's Institute for Telecommunication Sciences (ITS) attended the Department's 51st Annual Honor Awards Ceremony to receive Silver Medals on December 7. Chris Holloway was honored for major technical contributions that advance the knowledge of electromagnetic theory and its application

to commercial electronic systems. Steve Voran was honored for significant technical contributions that radically advance the state-of-the-art in objective speech quality measurement and assessment.

New Assistant Secretary for NTIA

Larry Irving, assistant secretary of Commerce for Telecommunications and Information for six years, left to pursue opportunities in the private sector. He was succeeded by Gregory L. Rohde, formerly Senior Legislative Assistant to Senator Byron L. Dorgan of North Dakota.

Irving, the first African American to head NTIA and its longest serving Administrator, was appointed in 1993. While at NTIA, Irving earned a reputation as an international leader in telecommunications and information policy. He worked to open foreign markets to the U.S. telecommunications industry, secure better protection for consumers and open up advanced telecommunications services to rural and other underserved areas of the country. Irving played a major role in the Administration's initiatives to promote Electronic Commerce and the Information Superhighway. He initiated NTIA's landmark Federal Government survey series, "The Digital Divide: Falling Through the Net. He played a major role in the efforts to bring about the most sweeping reform of U.S. telecommunications law in 60 years, the Telecommunications Act of 1996. He was also a key proponent of policies designed to promote diversity in the commercial broadcast arena and to increase opportunities for minorities and women in the emerging digital economy.

NTIA on the World-Wide Web

To expand electronic access to public information, NTIA established one of the first Federal government World-Wide Web (WWW) servers (<http://www.ntia.doc.gov>). All of NTIA's publicly available documents are posted on this web site. The following general principles guide NTIA's managers on electronic information dissemination; these principles apply to all NTIA electronic information dissemination efforts, regardless of specific form.

NTIA On-Line Information will be:

1. Designed for the external user; *i.e.*, constituent ease of use, interactivity, and usefulness of the information will be the overriding priority.
2. Accurate, Timely, Complete, and Relevant.
3. Information should be available on-line no later than when it is available in hard copy and preferably before the hard copy is available.
4. Limited to organizational and programmatic information.

NTIA's efforts to develop this site were recognized with Vice President Gore's Hammer Award.

Comments

NTIA welcomes comments on its activities and programs. To offer suggestions or obtain further information, please contact Sarah Maloney or Charles Franz at 202-482-1835 or send e-mail to smaloney@ntia.doc.gov or cf Franz@ntia.doc.gov.



NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

ANNUAL REPORT CY 1998

MISSION AND SCOPE

The National Telecommunications and Information Administration (NTIA): (a) serves through the Secretary of Commerce as the principal adviser to the President on domestic and international communications and information policy-making; (b) develops pro-competitive policies for presentation before the Congress and the Federal Communications Commission (FCC) and in bilateral and multilateral international fora; (c) manages all Federal use of the electromagnetic spectrum and generally promotes efficient use of spectrum; (d) in partnership with business and other federal agencies, conducts telecommunications technology research, including standards-setting; and (e) awards grants through the Public Telecommunications Facilities Program, and the National Information Infrastructure initiative.

NTIA is unique among Federal government agencies in that the work of the agency is focused exclusively on telecommunications and information. The agency's expertise encompasses every aspect of telecommunications, including community network applications, domestic policy, international policy, spectrum management, and telecommunications research and engineering.

With roughly \$70 million available for its activities, NTIA's workforce of approximately 290 full-time equivalent (FTE) employees works to promote the efficient and effective use of telecommunications and information resources in a manner that creates job opportunities, enhances U.S. competitiveness, and raises the standard of living.

The Government Performance and Results Act (Public Law 103-62 of August 3, 1993), commonly referred to as GPRA, provided a guideline for the further development and refinement of NTIA's strategic plan in 1998. As an active participant in the Department of Commerce's strategic planning efforts, NTIA senior managers believe that the agency's strategic planning process allows them to improve the management and effectiveness of the agency.

Within the resources available to the agency, NTIA addresses the highest priority issues in telecommunications and information today and maximizes the return on those resources by utilizing this expertise throughout its programs. Our analysts bring to their work an appreciation of the complexities of developing national policies, as well as the ability to draw on technical expertise to understand how those policies will facilitate or hinder development, and application expertise to gauge the impact on communities and individuals. This internal synergy is critical to NTIA's credibility and respect in the community; the agency's influence and advocacy record is a direct result of this synergy. NTIA's unique talents as an agency are readily apparent in the current Administration's record of accomplishments on a wide range of telecommunications issues, including universal service, the Telecommunications Act of 1996, global electronic commerce, Internet development, and digital broadcasting.

NTIA appreciates the contributions of employees, customers, stakeholders, and external experts during the continuing development of the agency's strategic plan. Employees at all levels have had opportunities to participate and contribute to this process. These contributions continue to stimulate

thinking about the future of telecommunications and information and the efforts and value of NTIA activities. As the agency continues to advance its strategic planning efforts, additional contributions from these individuals and others will be solicited on an on-going basis.

NTIA's vision, mission and the strategic goals and objectives that follow, guide the National Telecommunications and Information Administration in its unique role against the backdrop of an exciting, demanding, and promising future.

Vision:

NTIA envisions a world where telecommunications and information technologies are used to protect and improve the global quality of life.

Mission:

NTIA's mission is to promote the efficient and effective use of telecommunications and information resources in a manner that creates job opportunities, enhances U.S. competitiveness, and raises the standard of living.

GOALS AND OBJECTIVES 1999 – 2004

NTIA's goals define the agency's priority efforts. The goals are not listed in any relative priority order. A further discussion of each goal and its objectives is presented below.

GOAL 1: Promote open markets and encourage competition.

GOAL 2: Ensure spectrum provides the greatest benefit to all people.

GOAL 3: Advance the public interest in telecommunications, mass media, and information.

GOAL 4: Promote the availability and sources of advanced telecommunications and information services.

The following is a report on the major activities and accomplishments associated with these goals in 1998.

GOAL 1: Promote open markets and encourage competition.

Activities under this goal include opening markets, increasing competitive choices, advocating more competition in the international satellite services market, advancing U.S. policy interests in bilateral, regional, and international forums, and assisting developing countries in strengthening their telecommunications infrastructures.

NTIA develops policies promoting greater competition in telecommunications and information markets. NTIA's policies in this area are necessarily intertwined with another important goal, that of promoting affordable access to services for all Americans. NTIA believes that opening markets to competition leads to lower prices and greater choices for consumers. Implementation of the Telecommunications Act of 1996 by the Federal Communications Commission again provided a venue for debate about competition in 1998.

Competition in Telecommunications Markets

NTIA staff completed a working paper on Section 271 of the Telecommunications Act of 1996 to further discussion of sensitive and difficult issues of major importance. Section 271 of the Telecommunications Act of 1996 establishes the rules and procedures whereby certain local telephone companies -- the Bell

Operating Companies (BOCs) -- may seek entry into the "Inter-LATA" (long distance) market. The Federal Communications Commission (FCC) is charged with establishing rules to implement this provision of law. This working paper provided insight and suggestions on many sensitive and difficult issues that policymakers and regulators must address as they implement this provision of law. The paper emphasized that Section 271 should be seen as a crucial pillar in the procompetitive structure of the 1996 Act, particularly the desire to open local telecommunications markets to competition. The paper, therefore, urged the FCC to implement that provision in a way that would promote local competition and create incentives on the part of the BOCs to cooperate in that effort.

In addition, NTIA sent a letter to the FCC concerning implementation of Section 706 of the Telecommunications Act, which directs the FCC to take steps necessary to encourage deployment of advanced broadband services to all Americans. In the letter, NTIA stated that the best way to achieve the objectives of Section 706 would be for the FCC to promote vigorous competition in all telecommunications markets. The agency recommended that the FCC not grant any relief to incumbent telephone companies for their broadband services until those companies make available facilities and services needed by competitors to offer comparable services.

Bilateral, Regional and International Forums

NTIA formulates and articulates policy alternatives for Executive Branch position on major international telecommunications and information issues, and promotes U.S. policies to improve the competitiveness of the U.S. telecommunications and information industries in international markets. NTIA continued to advance the adoption of pro-competitive regulatory policies by other countries to facilitate liberalized access to foreign telecommunications and information markets. NTIA actively participated in bilateral consultations with such diverse foreign counterparts as the European Union (EU) Commission, various EU member countries, Russia, Canada, Italy, Spain, Mexico, Japan and others during which the Administration's policies supporting open access to telecommunications infrastructure and advanced information services were advocated. As part of an interagency team, NTIA has also assisted in the negotiation of bilateral agreements with several nations, including Australia, France, Ireland, Korea, Japan and the Netherlands, that will promote the further expansion of electronic commerce on a global basis.

Under the World Trade Organization's (WTO) Agreement on Basic Telecommunications Services, commitments made by seventy (70) members entered into force on February 5, 1998. NTIA helped negotiate this landmark telecommunications agreement that ensures that U.S. companies are able to compete against and invest in all existing carriers. The WTO members making these commitments account for 95 percent of world telecommunications revenue -- a \$675 billion industry.

As part of an interagency team, NTIA continues to work on implementation of the agreement and assists in monitoring the compliance of countries under this agreement. NTIA worked with U.S. Agency for International Development (USAID), the State Department, the FCC, and the U.S. Telecommunications Training Institute (USTTI), to develop and implement training workshops for foreign telecommunications regulatory authorities. The three, three-day workshops, which were focused on implementing the WTO Basic Telecommunications Agreement, were held in Washington, D.C. and covered a range of issues, including interconnection, spectrum management and universal service. The workshops also offered participants from developed and developing countries around the world a chance to review and discuss case-studies relevant to a liberalized market.

NTIA also participated in interagency efforts that secured a year-long agreement on duty-free treatment for electronic transmissions, and will continue to work on issues pertaining to electronic commerce during 1999.

Additionally, via its work with other Executive Branch agencies, the FCC, and industry, NTIA has promoted competition and liberalization in various International Telecommunication Union (ITU) forums. In particular, NTIA's involvement in the ITU's World Telecommunication Development Conference, Plenipotentiary Conference, and Development Sector Study Groups, assisted in promoting

U.S. objectives, especially with regard to developing countries. During the ITU Plenipotentiary Conference, NTIA led the U.S. negotiations with regard to the Internet and electronic commerce issues.

NTIA also engaged in multilateral consultations in a number of forums -- such as the Inter-American Telecommunications Commission (CITEL), Asia Pacific Economic Cooperation (APEC), the ITU, and the Organization for Economic Cooperation and Development (OECD) -- on a range of critical policy issues affecting the development of Internet-based services. At the OECD, NTIA played a leadership role in organizing a joint government-industry forum on content self-regulation in March. The forum demonstrated the range and scope of self-regulatory initiatives undertaken by industry representatives among the 29 OECD member states, and forged consensus on the practical merits of self-regulation and consumer empowerment. Working closely with other agencies and with industry, NTIA also played an active role in advancing U.S. policy objectives at the OECD Ministerial conference on electronic commerce held in Ottawa in October. The Ottawa Ministerial statement reflects consensus on several positions advanced by the United States: private sector leadership; the need for a predictable and minimalist legal environment for electronic commerce; the critical link between liberalized access to underlying telecommunications infrastructure and the expansion of electronic commerce; and the avoidance by governments of undue restrictions or regulations on Internet-based applications and services.

During 1998, NTIA continued its longstanding support for reform of the international accounting and settlements system. Working closely with other agencies and U.S. industry, NTIA helped negotiate resolutions at the World Telecommunications Policy Forum in March, which recognized the need for urgent reform based on the pressures of technological developments and increasingly competitive telecommunications markets. NTIA also facilitated the creation and work activities of an ITU Focus Group to assist developing countries in the transition to more competitive accounting rates. NTIA expects these efforts to continue throughout 1999.

NTIA has worked actively at the OECD to formulate international privacy policy. NTIA has helped to ensure that the OECD includes an emphasis on a multiplicity of privacy approaches, including private-sector-led approaches, and on the continued need for bridges between the different privacy approaches. NTIA has also participated in the critical effort of the United States and European Commission toward reaching an understanding on privacy protection with regard to personal data flows from EU countries to the United States.

NTIA participated in the Permanent Consultative Committee of the Inter-American Telecommunications Commission (CITEL) to discuss and make recommendations on regulatory and policy matters, including accounting rates, universal service best practices, interconnection best practices, electronic commerce, telemedicine/tele-education, and the negotiation of a telecommunications equipment Mutual Recognition Agreement in the 34 countries of the Free Trade Area of the Americas.

NTIA, the State Department, and the FCC successfully negotiated a Direct Broadcast Service (DBS) Agreement with Argentina and a Mobile Satellite Services Protocol with Mexico.

In conjunction with the International Trade Administration (ITA) and the Telecommunications Industry Association, NTIA coordinated and conducted the fourth Latin American Telecommunications Summit (LATS) in April in Argentina. Representatives from thirty U.S. telecommunications equipment manufacturers and service providers participated in LATS '98. Telecommunications Ministers and senior government officials from the largest markets in Latin America participated. LATS '98 provided industry representatives and senior government officials the opportunity to discuss key telecommunications issues facing the region. LATS also provided the opportunity for equipment manufacturers and service providers to promote their products in the Americas. LATS '98, like previous LATS events, successfully generated sales and market access benefits for U.S. industry.

In cooperation with ITA and other U.S. government agencies, NTIA is participating in and providing ongoing support for the Joint Government/Private Sector Experts of Committee on Electronic Commerce ("Joint Experts Committee"). The Joint Experts Committee is a non-negotiating committee of the Free Trade Agreement of the Americas process. The Joint Expert Committee is the one of the first

region-wide forums undertaking a discussion of electronic commerce and will continue its work into 1999.

During 1998, NTIA committed to and began planning a second China-U.S. Telecommunications Summit scheduled to take place in March 1999. In conjunction with ITA and the Telecommunications Industry Association, this Summit will bring together senior Chinese and U.S. government telecommunications officials, Chinese provincial telecommunications officials, and U.S. companies seeking to improve access to the growing Chinese marketplace and to promote their products in China.

Privatization of Intelsat and Inmarsat

For the past several years, NTIA, has worked in conjunction with the FCC and State Department to bring about a procompetitive privatization of the two international governmental satellite communications entities -- Intelsat and Inmarsat (the ISOs).

During 1999, NTIA expects that the final steps of Inmarsat privatization will be taken. This follows the 1996 creation of an Inmarsat spin-off -- ICO Global. Similarly, in 1998 Intelsat created a spin-off, New Skies, and is now beginning a new round of negotiations to completely privatize itself within the next two to three years.

The underlying issue in addressing privatization is ensuring open and competitive market access for all U.S. satellite service providers. Heretofore, the ISOs have had a clear advantage in securing market access -- sometimes through use of a state-owned monopoly operator. A procompetitive privatization of the ISOs should materially help level this playing field. NTIA expects that Congress will continue its strong interest in this issue during the 106th Congress, and we look forward to a continued solid partnership in seeking a mutually agreeable outcome.

International Special Committee on Radio Interference (CISPR)

NTIA participates primarily in the CISPR subcommittee dealing with emission limits for industrial, scientific, and medical equipment. In this work, NTIA has provided leadership to the U.S. preparatory process and has led U.S. delegations to international meetings.

GOAL 2: Ensure Spectrum provides the greatest benefit to all people.

The activities under this goal include developing spectrum plans and policies for both government and private sector users, satisfying the spectrum needs of Federal government agencies, advance spectrally efficient technologies and improving the management of Federal and non-Federal spectrum to maximize the value of spectrum to society.

Managing the spectrum and making future spectrum plans requires technical engineering expertise. This expertise is used to ensure that the spectrum policies and rules and regulations required for proper spectrum management nationally and internationally are technically valid; to derive the necessary technical facts that will lead to resolution of spectrum issues and problems; to provide a technical and engineering basis for future spectrum planning and standards; and to provide new ways to adopt new spectrum efficient technologies so the Federal government can use the spectrum efficiently and effectively.

Frequency Assignments

To fulfill the Federal government's needs for radio spectrum, NTIA's Office of Spectrum Management (OSM) maintains the Government Master File (GMF) of approximately 436,000 frequency assignments. There were about 193,300 Federal agency requests for assignment actions in 1998. Also, working through the Interdepartment Radio Advisory Committee, NTIA provided spectrum support for 62

planned government systems representing an investment over \$6 billion.

Automated Federal Spectrum Management System

NTIA began a program in 1993 to develop an automated federal spectrum management system to provide a standard computerized method for the Federal agencies to select spectrum that is interference free, submit applications for spectrum support, and validate that the spectrum requested is within the rules and regulations governing spectrum authorization. NTIA released seven versions of this system to the Federal agencies, culminating in Version 3.0 in September. Sixteen classes trained almost 200 frequency management personnel from 15 government agencies. Work continues to not only improve this product but also to prepare NTIA and the agencies for a follow-on system. The FCC, the railroad assignment agency, Maryland state assigners and Federal standard setting committees have expressed interest and are being supported in their use of the system.

Interdepartment Radio Advisory Committee (IRAC)

The IRAC is comprised of representatives from the 20 Federal agencies that are major spectrum users and is an integral part of the spectrum management process. This committee provides advice to NTIA on spectrum management, resolution of various spectrum issues and problems among Federal agencies, between the government and non-government sectors through the FCC, and internationally through forums such as the ITU. The IRAC is chaired and administered by NTIA. The IRAC and its subcommittees and ad hoc groups conducted approximately 133 meetings and addressed over 3,262 documents in 1998. These documents dealt with various Federal, non-Federal, and international spectrum management, policy, and planning issues and problems.

Public Safety Wireless Advisory Committee

The predominant public spectrum issues addressed this year dealt with direct support to the Public Safety Wireless Network, the Vice President's National Partnership for Reinventing Government Initiative, and efforts to address recommendations of the Final Report of the Public Safety Wireless Advisory Committee (PSWAC). The ability of the United States to deal with crime and disasters now and in the future may well rest on our ability to communicate and interoperate at all governmental levels. To that end, NTIA is developing a national plan to implement the three main recommendations of the PSWAC: (1) more spectrum for public safety voice, data, and advanced technology, (2) increased interoperability between Federal, State, and local agencies, and (3) identifying alternative funding sources for State and local public safety agencies. As a means of accomplishing this, NTIA and the FCC formed a Joint Public Safety Working Group to coordinate and align Federal, State, and local plans and policies.

The primary means of coordinating these plans among Federal agencies is through the IRAC. An IRAC subcommittee, consisting of representatives from Federal public safety departments and agencies, is addressing two main issues: (1) development of rules and regulations dealing with implementation of shared and joint-use telecommunications systems among Federal, State, and local agencies, and (2) implementation of a National Public Safety interoperability plan. Early success includes the establishment of a partnership with the State of Wisconsin to implement a state-wide communications system to be used by all levels of government using Federally allocated frequencies.

Federal Law Enforcement Wireless Group

NTIA has played an integral role in the planning and development of the vision of the Federal Law Enforcement Wireless Users Group (FLEWUG) and the Public Safety Wireless Network (PSWN) during this time. Our joint long-range goals include a National Plan for seamless, ubiquitous communications for all public safety agencies, involving significant regulatory and technical support to the program office. In addition, NTIA has provided advice and guidance in the implementation of PSWN program objectives, including principal involvement in research, planning, and outreach.

Public Safety Funding

NTIA also was a principal advisor on the Attorney General's Interagency Working Group on Public Safety Funding issues, exploring innovative ways of advancing Administration goals of an integrated National network while providing funding assistance to State and local public safety agencies. The group published a report and provided a tri-partite (Commerce, Justice, Treasury) budget initiative for FY 2000, proposing a Federal assistance program for State-level planning and local-level pilot projects.

Private Sector Coordination (PSC) Program

The PSC program provides industry the opportunity to (1) present its views on Federal radiocommunication issues, (2) receive advice on spectrum allocation matters and requirements, and (3) obtain information on Federal use of the spectrum directly from NTIA personnel and the IRAC, or through the Internet from NTIA's web page. The PSC program, initiated in June 1991, is designed to facilitate the timely and efficient exchange of information between Federal government agencies and the public on a wide variety of subjects related to communications and information issues.

Strategic Spectrum Planning (SSP) Program

In 1998, the SSP program continued its long-range spectrum planning effort by publishing the Radio Astronomy Spectrum Planning Options report, coordinating with the FCC regarding spectrum use above 30 GHz, and publishing a draft of the U.S. Spectrum Plan.

This program reviewed several FCC rulemakings and provided recommendations to the IRAC. Among other things, it recommended a reallocation of 1100 MHz of spectrum to improve sharing between Federal agencies and commercial users. The FCC has responded positively on these requests.

As a first step in producing a comprehensive spectrum plan, the SSP program has published a draft U.S. Spectrum Plan that contains a forward-looking National Table of Frequency Allocations, and tables of current and planned spectrum use for both the Federal government and the private sector. The Plan covers the spectrum range from 30 MHz to 300 GHz. The Plan was distributed to the IRAC members and NTIA staff for review and comment.

Program staff met for bi-lateral sessions with European spectrum managers twice during the year to exchange views on spectrum planning matters, and participated in the annual European Conference of Postal and Telecommunications Administrations (CEPT) Radio Conference.

Efficient Spectrum Technologies

To advance the development of spectrally efficient technologies, NTIA's Institute for Telecommunication Sciences (ITS) undertook research and engineering studies in coordination with NTIA's OSM to further expand applied knowledge of the radio frequency spectrum. Important results of this research were spectrum use concepts and models that led to more efficient industry and government use of the radio frequency spectrum. ITS performed spectrum resource studies as required to ascertain current and future Federal use of the spectrum and determine where significant improvements in utilization appear possible. Additionally, ITS operated a mobile capability, the Radio Spectrum Measurement System (RSMS), to measure and analyze the actual use of the spectrum. This system is used to perform measurements in the land mobile and radar bands at selected sites, and make other specialized measurements as necessary to ensure compliance with frequency assignment rules and regulations. ITS completed selected site measurements in coordination with OSM, at locations in Dallas; Columbia, MD; Savannah; and New Orleans -- looking at such issues as digital TV emission spectrum characteristics, maritime mobile interference issues, and ultra-wideband device emission spectrum measurements -- all intended to support more efficient use of the scarce spectrum and to aid in improved spectrum planning and policy.

ITS also undertook research and engineering to support the development of wireless technologies such as personal communication services (PCS) and wireless local loop, including local multipoint distribution services (LMDS). Measurements and modeling of the propagation of radio waves on short

paths in selected environments are crucial for the planning, development, and deployment of commercially viable systems. ITS supported the development of wireless local area networks in the N11 band through models supported by measurements that enable the accurate prediction of broadband communication link performance. ITS used simulation techniques to assess the effects of intra-system and inter-system interference on wireless network performance. These related activities provide a basis for system planning as well as spectrum regulation. Results also assisted companies in assessing the value of the radio spectrum in preparation for FCC auctioning. Finally, ITS developed fundamental data and more accurate modeling of radio propagation that will lead to improved methods of planning spectrum sharing for various services including advanced television (ATV) systems.

United States Telecommunications Training Institute (USTTI)

NTIA spectrum management experts, in conjunction with Motorola and ComSearch, successfully conducted a radio frequency spectrum management training seminar for 20 spectrum managers from 18 developing countries. The seminar was two weeks long, and is conducted annually in Washington under the auspices of the USTTI. The seminar is an industry and government joint venture that provides free training to spectrum professionals and regulators from developing nations. The seminar covered basic spectrum management and computer-aided techniques, development of commercial enterprises, and special topics in communications satellites and land mobile communications.

Federal Spectrum Management Seminar

NTIA successfully conducted two radio frequency spectrum management training seminars for 60 Federal government employees in 1998, many of whom were from outside the Washington area. The seminars are taught by NTIA and experts from other Federal agencies. An important benefit of the annual training seminars are that they permit the students to discuss and confer with NTIA senior officials resulting in NTIA providing guidance on problem resolution, and it also enables NTIA to obtain a good understanding of the spectrum management problems being experienced out in the field areas. NTIA can then make changes to its spectrum management processes to eliminate or minimize the problems and difficulties.

Emergency Readiness Plan (ERP)

In 1994, NTIA completed and published a revision of its ERP for Use of the Radio Spectrum. In 1997-98, NTIA and the IRAC Emergency Planning Subcommittee completed a draft revision and expansion of the ERP and forwarded it to the National Communications System (NCS) Committee of Principals (COP). Subsequently, in August, the NCS COP concurred with forwarding it to the Executive Office of the President for final approval. Upon final approval, NTIA will issue a CD-ROM containing the complete ERP, including the certified database of wartime spectrum priority data. This plan and its associated database will be the basis for NTIA and the Federal government to exercise spectrum responsibilities during all types of emergency situations.

Additionally, in 1997-98, NTIA completed the review of all spectrum-dependent systems projected for use in a wartime emergency environment. In these reviews, which included all systems certified by the IRAC's Spectrum Planning Subcommittee prior to October 1998, EPS members validated the missions that the systems support, the frequencies the systems are authorized to use, and the priorities of those missions, systems, and frequencies to be used in a wartime emergency as well as other pertinent data. Upon their validation, they were entered into the first-ever, prototype electronic database that addresses prioritized emergency requirements for radio frequency electromagnetic spectrum use by Federal agencies in support of a national emergency.

Response to Title III of the Balanced Budget Act of 1997 (BBA97)

This Act called for the reallocation and auction of 234 MHz of spectrum, nearly 40% of which directly impacts Federal government use of the spectrum. During 1998, NTIA prepared and released three major reports responding to various requirements of the 1997 Budget Act. In February, the Secretary of Commerce released the NTIA Spectrum Reallocation Report which identified 20 MHz of Federal

spectrum to be reallocated to the private sector to help meet spectrum needs for new emerging telecommunications technologies. In November 1998, the *Reallocation Impact Study of the 1990-2110 MHz Band* described the extensive Federal use and over \$87 billion current and planned investment in this band to support the U.S. space program. This band was designated in the 1997 Budget Act for reallocation and auction by the FCC. As a consequence of this impact study, a follow-up report, *Identification of Alternative Bands*, was prepared to identify alternative bands to the 2025-2110 MHz band for auction that meet the criteria specified in the 1997 Budget Act. This report was forwarded to Congress and the FCC by the NTIA Administrator on behalf of the President to exercise the option to substitute alternative bands that better serve the public interest and are expected to generate comparable spectrum auction receipts.

GOAL 3: Advance the Public Interest in telecommunications, mass media, and information.

Activities under the Public Interest goal include promoting universal service and access, assistance in maintaining and extending the services of public broadcasting and telecommunications facilities, promoting a diversity of choices in the mass media, encouraging private sector initiatives to give citizens the ability to protect their children from indecent material, facilitating private sector determination of the public interest obligations of broadcasters, establishing principles for the protection of personal privacy, and working to maintain the U.S. telecommunications and information infrastructure in time of crisis.

NTIA develops policies in many areas that promote the public interest. One is in telecommunications services, where NTIA's policies promote universal, available and affordable services for all Americans. Another is in considering policies for the development of the Internet and other advanced services. NTIA also works to promote the public interest in the nation's mass media, including that for new digital television.

E-Rate (Education Rate) and Universal Service

NTIA facilitated development and implementation of the E-Rate, which provides assistance to schools, libraries and other non-profit entities seeking to gain access to advanced telecommunications technologies. This work, completed through a series of written analyses and personal meetings, had a significant effect on the design and implementation of the program.

Falling Through the Net II, New Data on the Digital Divide

This is the second report in a series of reports on affordable access to services and technologies. Released in August 1998, this report analyzes the results of a survey conducted by the Census Bureau at NTIA's request, concerning penetration rates for telephone and computer technologies in the U.S. It demonstrates rapid acceptance of computer technology among Americans, but notes a continuation of deep disparities in penetration of technologies among some economic, demographic and racial groups. The report supports the Administration's E-rate efforts and underscores the need for "community access centers" along the lines of many projects funded by NTIA's grant programs.

Policy Forums

NTIA sponsored a series of public forums focused on emerging telecommunications issues, including Internet telephony, wireless local loop, and the Telecommunications Act of 1996. This Forum series was an important policy tool that served to help inform NTIA's policies regarding implementation of the Telecommunications Act and emerging telecommunications technologies. The forums also served to educate both industry and the wider policy community inside and outside of Washington D.C.

Connecting All Americans Conference

Early in the year, NTIA and the Public Utility Law Project co-hosted a conference that focused on

programs and policies designed to ensure connectivity to advanced information technology for those in low income and rural communities. Among other issues, the conference addressed immediate opportunities to take full advantage of Telephone Lifeline service and improve access to new telecommunications technology for low income and rural communities. Vice President Gore gave the keynote address to the audience of approximately 500 people, who included officials from Federal, state and local governments, and grass roots organizations. The conference also included the interactive demonstrations of highly successful projects serving low income and rural communities. A post-conference workshop addressed the details of developing and funding a community advanced technology business plan.

1998 Networks for People Conference, "Society and Information Infrastructure: The Next Generation"

NTIA held this conference as a forum for public service organizations to discuss the connections of people, information technology, and services across a broad spectrum of American life. NTIA will produce a report in 1999 based on the discussions held during this conference.

Internet Content Summit

With respect to the development of children-friendly Internet content, the Commerce Department and NTIA co-hosted the *Digital Media Content for Children and Teens* conference, held in Los Angeles, California, June 11-12. The conference focused on the creation of quality online content for children and teens, and also addressed the issue of online marketing and advertising to children. Vice President Gore, FTC Commissioner Thompson, and Commerce Assistant Secretary Irving participated in the conference. At the conference, Vice President Gore announced the Administration's proposed legislation that would provide \$450 million to help public broadcasting enter the digital era. One of the outcomes of the conference is a commitment by the private sector to explore the development of "greenspaces in cyberspace." The Commerce Department and NTIA are facilitating activities of private sector groups that are interested in this initiative.

Privacy

NTIA released a Notice on Internet Privacy, which sought public comment on various aspects of Internet privacy issues, including the effectiveness of self regulation. NTIA also sponsored a public Internet Privacy Summit. As a result of these efforts, over 50 of the largest businesses and 15 trade associations have formed an alliance to promote privacy online. The Online Privacy Alliance (OPA) members have committed to implement the fair information practices described in the Framework involving notice, choice, access, and enforcement.

President's Advisory Committee on the Public Interest Obligations of Digital Television Broadcasters

This Committee delivered its final report on December 18, 1998, as required by law. Since the Committee members were appointed in 1997, NTIA has served as Secretariat for this Committee and provided administrative and technical support for the many meetings of the Committee and in the report writing process.

Minority Broadcast Ownership Report

An annual survey of minority ownership of broadcast media, NTIA's Ownership Report is unique and eagerly awaited by the industry. The results of this year's report have led to further emphasis by the Federal Communications Commission and NTIA on the barriers to minority ownership of telecommunication facilities and possible government actions.

Critical Infrastructure Protection

The Secretary of Commerce has assigned NTIA to fulfill the lead agency responsibilities for the

information and communications sector under the Critical Infrastructure Protection Program (CIP). CIP was formally initiated when the President issued Presidential Decision Directive 63 (PDD-63) in May 1998. In addition to its lead agency responsibilities, NTIA will also be performing telecommunications research activities specifically designed to further CIP objectives. Both the CIP lead agency and research form a major new body of work that may grow substantially in future years. Organizationally, this work will be done through NTIA's Office of Spectrum Management and Institute for Telecommunication Sciences.

GOAL 4: Promote the Availability and Sources of Advanced Telecommunications and Information Services.

Activities under this goal include demonstrating advanced, innovative applications of telecommunications and information technology in the non-profit and public sectors, promoting the growth of electronic commerce and Internet use domestically and internationally, meeting the compelling telecommunications research needs of other Federal agencies and industry through cooperative research and development, promoting international acceptance of U.S. spectrum proposals, and participating in ITU and domestic standards development to benefit U.S. industry and user interests.

Telecommunications and Information Infrastructure Assistance Program (TIAP)

The objective of NTIA's TIAP is to promote the application of telecommunications and information technology to benefit all Americans. This program supports the Administration's efforts, through the National Information Infrastructure (NII), to use new telecommunications and information technologies to connect our citizens to one another, to services, and to information. While the private sector is building the NII, Federal government actions are necessary as a catalyst to facilitate and encourage private development of the NII.

TIAP provides matching grants to non-profit organizations and state and local governments across the United States to demonstrate advanced, innovative applications of telecommunications and information technology. These grants provide critical seed money to help forge partnerships in local communities across the country ensuring that telecommunications technologies live up to their potential by enhancing community services, health care delivery, public safety, and education and lifelong learning.

In 1998, forty-six public institutions, competitively selected from more than 750 applicants, were awarded \$18.5 million in federal grants. Projects were selected on the basis of their ability to serve as models that can be replicated across the country. The grants were awarded in five categories; some examples of the awards include:

Education, Culture and Lifelong Learning: a project in Vermont will use network technology to connect artists as mentors to provide arts education to rural schools;

Public Services: a project in Minot, North Dakota, will provide Internet resource tools to adults with mental retardation to help them locate employment and training opportunities;

Health: the University of South Florida will create a state-wide database of health information to track health indicators and allocate resources more effectively;

Public Safety: the Western Identification Network will assist law enforcement officials in Wyoming, Idaho, Montana, Nevada, Oregon, Utah, Washington and Alaska in tracking down suspects by sharing digitized photos; and

Community-Wide Networking: the State of Indiana will engage young people in the democratic process through network technology. The Indiana Youth Services Association (E-YAC) will gather input on youth-related issues from thousands of youth via the Internet and make it available to local and state government officials and lawmakers.

Since the TIAP program was initiated in 1994, NTIA has awarded over \$118 million in matching funds that has spurred nearly \$280 million in total investments.

Public Safety Report

In 1998, NTIA released *Safety Nets: Protecting Lives and Property in the Information Age*, the third in a series of reports that tracks the impact of telecommunications and information technology on Americans today. The report describes how new technologies are changing the face of public safety. At a time when public safety resources are scarce, these technologies can enhance existing law enforcement efforts.

Grant Evaluations

Westat, an independent research and consulting firm, completed an assessment of projects funded by the TIAP program. The report consists of an in-depth analysis of 206 organizations that received seed funding during TIAP's first two years. Westat found that the program is having a wide-reaching impact, particularly in rural and underserved areas. The report concluded that:

TIAP has demonstrated the value of investing modest amounts of Federal seed money in innovative technology applications. Evidence from the mail survey suggests that most of the projects needed TIAP's support to proceed beyond the conceptual phase. The high success rate among the 1994 and 1995 recipients (as measured by the range of impacts and the proportion of projects still in operation after the Federal funding expired) suggests that TIAP invested wisely.

With a modest Federal investment, TIAP grant recipients are spurring further development and having a tremendous effect on communities across the nation.

Westat also worked with NTIA on the development of an online reporting system for TIAP grant recipients. The system will allow NTIA to collect and analyze performance data, innovate grants management, and reduce paperwork burden on TIAP's grant recipients.

Public Telecommunications Facilities Program (PTFP)

NTIA's PTFP assists in maintaining and extending the services of public broadcasting and telecommunications facilities, including digital broadcasting applications in the public interest. The program annually awards grants public broadcasting and to other noncommercial entities for the purchase of, or in some cases to plan for the eventual purchase of telecommunications equipment. In 1998, PTFP issued grants totaling approximately \$19.8 million to 115 recipient organizations in 41 states. The grants enable public broadcasting organizations, as well as many nonbroadcast operations, to buy equipment to activate new services, to extend the range of present services, and to improve existing broadcast facilities.

In 1998, PTFP awarded 47 public radio grants, 55 public television grants, 12 distance learning grants, and one grant to the University of Hawaii for the Pan-Pacific Educational and Cultural Experiments by Satellite (PEACESAT) Project. The awards will extend a public radio signal to approximately 453,000 persons who presently do not receive any signal. In addition, the awards will assist public television stations with the purchase of digital-ready or digitally compatible equipment. Two of these awards will allow stations KCTS-TV, Seattle, and KQED-TV, San Francisco, to complete their conversion to digital broadcasting.

PTFP has been the sole source of federal funding for catastrophic loss and urgently needed replacement equipment. Communities hit by recent hurricanes, fire, wind storms, and earthquakes would be without public television and radio if it were not for the program. In 1998 for example, NTIA awarded a grant to replace the radio antenna and transmission line of KBSA-FM, Shreveport, Louisiana, that were destroyed when the station's tower collapsed during a severe storm.

Other examples of this year's awards include a grant to establish the first public radio service to the

Outer Banks area of North Carolina. Another grant will help the Mississippi Authority for Educational Television buy a new tower, antenna, and transmission system after the collapse of a commercial tower on which its Jackson station, WMPN-TV, transmitted service. Another award will extend the video-based, interactive distance learning services of Northern Arizona University to sites on the Hualapai, Navajo, and White Mountain Apache Indian Reservations.

Global Electronic Commerce

NTIA has played an active role in development and implementation on the Administration's Global Electronic Commerce initiatives.

Domain Names: NTIA took the lead on implementing President Clinton's directive to privatize the Internet domain name system (DNS) in a manner that increases competition and facilitates international participation in its management. NTIA began by soliciting public comment on DNS administration and developing, on the basis of that public input, a statement of Administration policy on DNS management. NTIA issued the policy statement, known as the "White Paper," on June 5, 1998, identifying key DNS functions requiring coordinated management and establishing principles under which the U.S. government will recognize a new, not-for-profit corporation formed by the private sector to administer policy for the Internet name and address system. On November 25, 1998, NTIA entered into a Memorandum of Understanding (MOU) with the Internet Corporation for Assigned Names and Numbers (ICANN), a California based not-for-profit corporation, under which NTIA and ICANN will collaborate on the design, development and testing of mechanisms, methods, and procedures that must be in place and the steps necessary to transition management responsibility for DNS functions now performed by, or on behalf of, the U.S. government to a private-sector, not-for-profit entity.

In 1999, NTIA will continue this work, with the goal of completing the transition to private sector management by October 1, 2000. NTIA's role, during this transition, will be to collaborate with ICANN to implement the White Paper's principles of stability, competition, private, bottom-up coordination, and global representation. NTIA will also continue to work with Network Solutions, Inc. (NSI) to make competitive registrar services in .com, .net., and .org available by the summer of 1999. Finally, NTIA will continue to consult with Congress, with the public, and with the international community, including other interested governments, throughout the transition period.

Promoting Sound Internet and E-Commerce Policy around the World. The Administration's approach to electronic commerce is based on principles that emphasize the importance of private sector leadership and minimal government intervention in the online marketplace. We believe that these principles account for the spectacular growth of the Internet in recent years. As the Internet emerges as a global marketplace, however, over-regulatory or bureaucratic approaches to electronic commerce in one country can have a profound, negative impact on the growth of e-commerce around the world. Accordingly, NTIA has reached out to the international community -- both the private sector and governments -- to promote a non-regulatory approach to electronic commerce. We have advocated non-regulatory approaches in bilateral meetings with our trading partners, including the European Union and individual EU member states, Japan, Australia, Canada, Mexico, Russia, Italy, Spain and other countries. NTIA has brought this message to a number of international and multi-lateral fora including the OECD, the ITU, CITELE, APEC, and the Free Trade Area of the Americas (FTAA) where e-commerce work is ongoing. NTIA has worked with the private sector through overseas offices of the American Chamber of Commerce, the United States Council for International Business (USCIB), as well as through the Trans-Atlantic Business Dialogue and the U.S.-Japan Business Council.

Building Trust in the Internet: The potential of the Internet and electronic commerce to enhance the quality of life and to ensure continued strong economic growth will be hampered unless Internet users know that their personal information is secure on the Internet and that, as consumers, they will get what they pay for online. In 1998, NTIA worked closely with U.S. industry, consumer and privacy advocates, and the international community to build trust in the Internet, consistent with the Administration's commitment to private sector leadership and minimal government intervention in e-commerce. NTIA has focused principally on self-regulatory tools and technological solutions, rather than regulatory regimes, to build consumer trust and confidence in the online medium. We believe that the private sector

accepted the challenge of private sector leadership in 1998, as evidenced by the creation of the Online Privacy Alliance, the BBBOnline program and TRUSTe's work in privacy protection. Our challenge in 1999 is to work with the private sector to promote effective self-regulatory programs more broadly among Internet businesses, to bring private sector leadership to bear on the problem of developing easy to use mechanisms for resolving consumer complaints about electronic transactions, and to foster the development of effective consumer protection in cyberspace.

Cooperative Research and Development

Under other agency reimbursable work agreements, NTIA's Institute for Telecommunication Sciences (ITS) provided telecommunications planning assistance to a variety of Federal agencies. For example, ITS completed an initial inventory of telecommunications assets for the Department of Commerce in support of the development of a Strategic Telecommunications Plan that will address the telecommunications needs of the Department well into the next century. ITS also completed a national plan that is currently being implemented for the augmented Global Positioning System (GPS) to meet the navigational and positional needs of all modes of surface transportation. ITS also provided support to the Federal Highway Administration in the development of Intelligent Transportation Systems (ITS), formerly the Intelligent Vehicle Highway System (IVHS). In addition, ITS provided leadership of the IEEE Vehicular Radar Standards subcommittee for developing collision avoidance radar standards for the Nation's highways.

ITS provided key technical support to the work of the Federal Railway Administration in improving railway traffic management and safety, to the National Communications System in enhancing communications survivability during national emergencies, and to other Department of Defense and Security agencies in improving their strategic and tactical communications capabilities. These efforts support a key NTIA responsibility of making available its laboratory's telecommunications expertise to other Federal agencies in a centralized, cost-effective manner.

The Federal Technology Transfer Act of 1986 (FTTA) allows Federal laboratories to enter into cooperative research agreements with private industry, universities, and other interested parties. The law was passed in order to provide labs with legal authority to enter into these arrangements and thus encourage technology transfer from Federal labs to the private sector. ITS established a core telecommunications research expertise that is accessible to both the public and private sectors and is actively engaged in technology transfer and commercialization efforts by fostering cooperative telecommunications research with industry where benefits can directly facilitate U.S. competitiveness and market opportunities. Through cooperative research and development agreements (CRADAs) with industry, ITS applies its expertise to practical problems in telecommunications today.

ITS completed several CRADAs with the private sector (e.g., U S WEST Advanced Technologies, Inc., Hewlett-Packard, American Automobile Manufacturers Association, GTE Laboratories, Integrator Corporation, Industrial Technologies, Inc.) to design, develop, test, and evaluate advanced telecommunications concepts in direct support of the NII and GII. Data derived from these CRADAs provided a foundation for domestic and international standards development and efficient allocation of radio frequency spectrum resources. To date, major contributions to personal communication services (PCS) and Local Multipoint Distribution Systems (LMDS) technologies have been and will continue to be carried out under these CRADAs to aid U.S. efforts to rapidly introduce new communications technologies for the benefit of society.

ITS continued its efforts to expand technology results to the larger user community. One way is through our Telecommunication Analysis Services (TA Services) program, an on-line dial-up service that currently reaches over 200 government and private sector users across the nation and makes available the latest models and tools developed by ITS in the telecommunications field. ITS expanded availability of the services through the introduction of web-based online electronic CRADAs, greater outreach, e.g., NAB conference demonstrations, and by making available the latest models (e.g., PCS propagation) that will be useful to telecommunications systems planners and designers. ITS will continue these efforts in 1999 and beyond.

International Standards Work

During 1998, ITS provided leadership of the U.S. ITU-T Study Group responsible for coordinating U.S. contributions to international standards on Broadband-ISDN and the GII at the request of the Department of State. ITS also provided leadership of the international working parties responsible for B-ISDN/GII performance standards, and contributed to related multimedia performance work. ITS continued these important leadership activities, and conducted focused research supporting the development, demonstration, and implementation of B-ISDN/GII performance standards promoting U.S. domestic competition and international trade objectives. ITS also provided national and international leadership of the ITU-R Study Group and a Working Group responsible for propagation modeling standards. ITS contributed to the development of the U.S. position on spectrum requirements and other technology issues for the International Mobile Telecommunications (IMT)-2000 Conference dealing with the third generation of wireless communications. ITS continued its role in broadening and strengthening U.S. industry participation in international standards development through seminars and workshops, conference presentations, technical publications, and the provision of standards information services.

ITS' international standards activities were complemented by active involvement in the development of U.S. standards for B-ISDN and advanced packet-switching networks within the American Standards Institute (ANSI)-accredited T1 (Telecommunications) Standards Committee. ITS continued to play a key leadership role in Subcommittee T1A1, which is responsible for developing performance standards for U.S. digital networks, including B-ISDN. ITS also developed formal contributions to national and international standards committees proposing technical solutions to some of the most compelling issues facing U.S. telecommunications planners. Examples included interoperability of multi-vendor systems employing various transmission media (cable, microwave, fiber, satellite) in a competitive environment, and the key B-ISDN/ATM and Internet Protocol (IP) network implementation problems of economical resource sharing among integrated services. ITS' results promoted competition and innovation in the provision of integrated broadband digital services and helped ensure that emerging U.S. broadband network standards are consistent with a competitive market environment, with the Administration's NII and GII objectives, and with applicable NTIA and FCC policy guidelines.

In addition, ITS undertook telecommunications research and engineering activities directed toward the development, implementation, and promulgation of user-oriented performance measures for integrated data, audio (including voice), video, and multimedia communication equipment and services. ITS continued to apply its state-of-the-art B-ISDN/ATM performance measurement laboratory in validating and optimizing telecommunication performance standards. This research is aimed at developing user-oriented, technology-independent performance parameters and measurement methods for digital audio and high-speed data communication services. ITS continued related research in digital video communication performance supporting such emerging and future applications as video telephony and teleconferencing, computer-aided design and manufacturing, and interactive video distribution, and is continuing to integrate its prototype data, audio, and video performance measures to provide multimedia test capabilities. These user-oriented test capabilities are extremely valuable in implementing and optimizing the NII and GII.

International Telecommunication Union

Through its participation in international forums, NTIA ensures that U.S. spectrum requirements are satisfied on an international basis. These forums include the International Telecommunication Union (ITU), the Commission on Inter-American Telecommunications (CITEL), and the International Special Committee on Radio Interference (CISPR).

The ITU, a specialized agency of the United Nations, has 188 Member States, including the United States. NTIA, the State Department and the FCC participate in the ITU via plenipotentiary conferences, radio conferences, technical study groups, and other forums.

1998 Plenipotentiary Conference. NTIA played a key role in the preparations for this conference and in the work of the U.S. delegation at the conference. NTIA, with the advice of the Radio Conference

Subcommittee (RCS) of the Interdepartment Radio Advisory Committee (IRAC) developed coordinated federal agency views on a variety of issues including the structure, budget and strategic plan of the ITU.

World Radiocommunication Conference 2000 (WRC-2000). NTIA began its preparations for this conference immediately after the close of WRC-97. NTIA and the FCC are continuing their previously established joint processes for the development of draft U.S. proposals for world radiocommunications conferences. NTIA, through the RCS, has approved preliminary views on most of the agenda items for the conference. This represents the first time that the U.S. has put forth its views in an official form so early in the conference preparation process. Furthermore, NTIA sent two initial draft proposals to the FCC for coordination and approval. Key issues for this conference includes spectrum for 3rd generation wireless, protection of Global Positioning System (GPS) operations, and sharing between nongeostationary and geostationary fixed satellite service systems.

Technical Study Groups. NTIA contributes to the work of the ITU Radiocommunications Sector study groups by participating in U.S. preparation activities of the State Department International Telecommunication Advisory Committee (ITAC), which is organized to "mirror" the ITU, and through participation on the U.S. delegations to study group and sub-group meetings. During 1998, NTIA provided chairmen and led U.S. delegations for Study Group 1 (spectrum management), Working Party 1A (spectrum engineering), WP1B (spectrum sharing), Task Group 1/5 (unwanted emissions), Task Group 1/6 (coordination areas around satellite earth stations), Study Group 3 (radio propagation), and Joint Rapporteur Group 8A-9B (fixed wireless access). Furthermore, NTIA coordinated many of the preparations and led the U.S. delegation to Working Party 8D (mobile-satellite and radio-navigation satellite). These study groups are essential to laying the technical ground work for radio conference agenda items as well as developing recommendations to solve important technical issues of concern to the international community.

NTIA Gold and Silver Medalists

The Department of Commerce Gold and Silver Medal awards provide an opportunity for the Department to acknowledge those employees whose accomplishments warrant special recognition. The following are NTIA recipients of the Department's Gold and Silver Medals:

GOLD

Personal and Professional Excellence Category
E-Rate program -- James McConnaughey (OPAD)

SILVER

Leadership Category
Land mobile radio standards -- William Pomper (ITS)

Leadership Category
Digital television broadcasting and cable services -- Eldon Haakinson (ITS)

Personal and Professional Excellence Category
CATS Team -- Elizabeth Echols (OIA), Roanne Robinson (OAS), Diane Steinour (OIA), Eric Rosenberg (OIA) and Paige Darden (OPA)

Personal and Professional Excellence Category
1997 WRC -- Karl Nebbia, James Vorhies, Darlene Drazenovich and Edward Davison (OSM)

Leadership Category
Federal radio spectrum reallocation -- Edward Drocella, William Druhan, Steven Jones, Michael Doolan and Robert Wilson (OSM), Kathy Smith (OCC)

NTIA on the World-Wide Web

To expand electronic access to public information, NTIA established one of the first Federal government World-Wide Web (WWW) servers (<http://www.ntia.doc.gov>). All of NTIA's publicly available documents are posted on this web site. The following general principles guide NTIA's managers on electronic information dissemination; these principles apply to all NTIA electronic information dissemination efforts, regardless of specific form.

NTIA On-Line Information will be:

1. Designed for the external user; *i.e.*, constituent ease of use, interactivity, and usefulness of the information will be the overriding priority.
2. Accurate, Timely, Complete, and Relevant.
3. Information should be available on-line no later than when it is available in hard copy and preferably before the hard copy is available.
4. Limited to organizational and programmatic information.

NTIA's efforts to develop this site were recognized with Vice President Gore's Hammer Award.

Year 2000

NTIA has made significant progress in ensuring that our computer systems and proprietary software will be operational after the turn of the century. Most of NTIA's PCs have been tested for Year 2000 compliance. NTIA is requiring that all new PCs be certified to be Year 2000 compliant. All of the vendors of our "industry standard" off-the-shelf hardware and software are now, or are planning to be, Year 2000 compatible in their next upgrade.

Comments

NTIA welcomes comments on its activities and programs. To offer suggestions or obtain further information, please contact Sarah Maloney or Charles Franz at 202-482-1835 or send e-mail to [<smaloney@ntia.doc.gov>](mailto:smaloney@ntia.doc.gov) or [<cfranz@ntia.doc.gov>](mailto:cfranz@ntia.doc.gov).

Copies of documents cited in this report are for sale by the National Technical Information Service, Springfield, VA (703) 487-4650.



NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION

ANNUAL REPORT

CY 1997

MISSION AND SCOPE

The National Telecommunications and Information Administration (NTIA): (a) serves through the Secretary of Commerce as the principal adviser to the President on domestic and international communications and information policy-making; (b) develops pro-competitive policies for presentation before the Congress and the Federal Communications Commission (FCC) and in bilateral and multilateral international fora; (c) manages all Federal use of the electromagnetic spectrum and generally promotes efficient use of spectrum; (d) in partnership with business and other federal agencies, conducts telecommunications technology research, including standards-setting; and (e) awards grants through the Public Telecommunications Facilities Program, and the National Information Infrastructure initiative.

The Government Performance and Results Act (Public Law 103-62 of August 3, 1993), commonly referred to as GPRA, provided a guideline for the development of NTIA's strategic plan in 1997. As an active participant in the Department of Commerce's strategic planning efforts, NTIA senior managers became convinced that implementing an agency strategic planning process would allow them to improve the management and effectiveness of the agency. Within the resources available to the agency, NTIA addresses the highest priority issues in telecommunications and information today and maximizes the return on those resources by utilizing this expertise throughout its programs. Our analysts bring not only an appreciation of the complexities of developing national policies, but they also draw on technical expertise to understand how those policies will facilitate or hinder development, and application expertise to gauge the impact on communities and individuals. This internal synergy is critical to NTIA's credibility and respect in the community; the agency's power of influence and ability to successfully advocate positions is a direct result of this synergy. The NTIA plan sets forth our vision for the future, defines our mission, and establishes goals and objectives. Formal strategic planning represents a management change for NTIA -- a change which will help create a more effective agency, one capable of assisting consumers and industry to benefit from the emergence of the telecommunications and information industries as the fastest growing and most productive sector of our economy.

NTIA's vision, mission and the strategic goals and objectives that follow, guide the National Telecommunications and Information Administration in its unique role against the backdrop of an exciting, demanding, and promising future.

Vision:

NTIA envisions a world where telecommunications and information technologies are used to protect and improve the global quality of life.

Mission:

NTIA's mission is to promote the efficient and effective use of telecommunications and information resources in a manner that creates job opportunities, enhances U.S. competitiveness, and raises the standard of living.

GOALS AND OBJECTIVES 1997 -- 2002

The following agency goals and objectives define NTIA's priority efforts. The goals are not listed in any relative priority order and the agency does not plan to prioritize these goals against each other at this time.

Goal 1: Increase the availability of affordable access to telecommunications and information services for all Americans.

NTIA develops policies promoting universal, available and affordable services for all Americans, and competition in telecommunications and information markets. In 1997, no issues were more important than those surrounding implementation of the Telecommunications Act of 1996. These issues included universal service, access charges, interconnection, the V-Chip and children's television programming, the Political Response Rule and transition to digital television.

In a historic decision responsive to concerns expressed by NTIA, the FCC in August 1997, adopted a new universal service regime for the country. Highlights of the decision include:

Schools and Libraries: Chief among the features of the universal service order was the adoption of a \$2.25 billion fund to reimburse telecommunication providers with discounts for telecommunication services for schools and libraries. The President has set a goal of linking every classroom in America to the Internet by the year 2000. Through NTIA's work this goal will more likely be reached. On behalf of the President and Vice President, NTIA presented and argued for a program to provide schools and libraries, primarily those with little resources, with deep discounts in their bills for all telecommunication services. NTIA filed a proposal that was widely debated and then adopted in important parts. NTIA worked as part of the implementation team of the FCC, the Departments of Education and Agriculture and interested education groups to put together an implementation plan for delivery of services to schools and libraries and payment to the companies who provide the services. NTIA's staff spoke with educators, regulators, telecommunication practitioners and the industry all over the country in support of the President's goal.

Rural Health Care Facilities: Another provision of the FCC's universal service order provides discounts to rural health care providers. NTIA provided the FCC information, based on experience with NTIA's THAP grant program, that showed the need for discounted rates for rural areas and helped conceptualize the program together with the Departments of Health and Human Services and Agriculture. NTIA continues to be involved with implementation efforts and has taken a lead in advising the White House on how to integrate the telecommunications efforts that are going forward generally in the health care profession.

Lifeline Service: The FCC adopted several provisions largely developed by NTIA. Among other things, the FCC adopted a uniform federal approach to funding phone service for poor people. It also adopted,

again at NTIA's urging, a rule that would prohibit companies from disconnecting a customer's local phone for failure to pay toll calls, and allowed customers to cap their toll calls at no charge. NTIA demonstrated in its filing that these changes are likely to increase telephone penetration among under-served customers.

Access for the Disabled: The Telecommunications Act provided for "open access" to the telecommunications network for people with disabilities. NTIA was an active participant in the rulemaking before the Disabilities Access Board, to ensure that these provisions are implemented.

In parallel with the changes mandated by the Act, the FCC undertook a proceeding to reform access charges -- payments that telecommunications providers must make in exchange for access to the public switched telephone network. NTIA staff met with industry, consumer groups and the states to help the White House develop the Administration's position on these reform measures. In an extremely complex proceeding, NTIA filed formal comments with the FCC in favor of the position that the FCC ultimately accepted. This resulted in substantial reductions in access charges and a pro-competitive reform of the way in which such charges are collected. NTIA staff briefed senior White House officials on the proposal and were called upon to brief the Vice President to harmonize Executive Branch positions. NTIA's proposal was widely seen as breaking the logjam that had developed at the FCC over the access reduction issues.

NTIA also continued to work with the FCC and the states on an interconnection regulatory system that will ensure entry by competitors into the local exchange market. NTIA has done much work with the states on this issue and is often credited with being the "honest broker" in this debate by both sides and the industry.

NTIA also began planning for a major national conference on next steps for universal service. Planned for February 1998, the conference will highlight the gains made in universal service and the next generation of telecommunication needs for individuals and communities, especially those who are not likely to see the immediate benefits of a competitive market. NTIA also is collaborating with Columbia University on a conference for international regulators, to be held in March 1998, to share with the world the lessons learned in implementing competitive policies, Universal Service and deploying technologies.

Goal 2: Develop and promote policies and plans for use of the radio spectrum that provide the greatest benefit for all Americans.

NTIA has major responsibilities for supporting federal agency missions and promoting U.S. commercial interests dependent upon the use of the radio spectrum. Due to the global nature of telecommunications, fulfilling these requirements depends heavily upon international activities. Therefore, NTIA has increased its efforts in international forums, particularly the International Telecommunication Union (ITU).

The ITU is a specialized agency of the United Nations (UN) with 188 member nations. ITU members develop international agreements, voluntary standards, and recommended practices that members agree to consider in the development of their respective national policies. NTIA's international policy and spectrum management staff work with the State Department and the FCC ensure that the international spectrum needs of the United States are met now and in the future through various technical study groups, radio conferences and other forums of the ITU. The part of the ITU devoted to radio spectrum issues is the ITU Radiocommunication Sector (ITU-R). The principal work of the ITU-R is conducted at

World Radio Conferences (WRCs), which are held every two years. These conferences establish new and revised International Radio Regulations that direct the use of radio spectrum worldwide. The ITU-R also includes a large number of study programs carried out by Study Groups. Study Groups are comprised of technical experts that meet periodically to establish technical practices, recommend technologies and technical solutions and provide the technical basis for World Radio Conferences.

NTIA plays a key role in the preparations for and the conduct of the U.S. representation in these Conferences. NTIA, through the Radio Conference Subcommittee (RCS) of the Interdepartment Radio Advisory Committee (IRAC), approved more than 40 proposals for WRC-97. The FCC is responsible for coordinating private sector proposals. Due to the increasing use by the private sector of spectrum once exclusively reserved to the Government, there are many areas of overlap between public and private sector spectrum use. NTIA and the FCC accordingly have, by increased coordination during proposal preparation, improved the process through which proposals are developed.

Six NTIA staff members served on the U.S. delegation for the month-long WRC-97 in Geneva. Many others served on the Home Team, providing analysis and support during the complex negotiations. NTIA is deeply appreciative for the personal dedication and sacrifices made by these individuals. The results of the WRC-97 generally were favorable to U.S. interests and proposals. New spectrum is now available for Low Earth Orbiting (LEO) mobile satellite services and new non-geostationary satellite services, as well as for space science services including the international Space Station and global environmental monitoring. Spectrum also is provided for new stratospheric fixed systems known as Sky Stations that will use innovative technology to fly large platforms at altitudes of approximately 17 miles to serve the communications needs of metropolitan areas. The WRC-97 adopted new procedures designed to mitigate the problem of over-filing at the ITU for the limited number of available satellite slots. Other proposals, including access to more channels for High Frequency (shortwave) broadcasting, were deferred to the next conference in 1999.

In coordination with the Department of State and FCC, NTIA is participating in the planning for the Plenipotentiary Conference of the ITU, which will take place in Minneapolis, Minnesota, October 12 - November 6, 1998. The Conference, which takes place every four years, sets the ITU policy direction for that time frame, and elects the ITU's Director General and its four senior officials. For the first time since 1947, the United States will host this conference, with participation expected by Ministers from virtually all the 188 member countries of the ITU. NTIA is working with the State Department to coordinate the activities of U.S. industry and the Minnesota Host Committee (MHC). NTIA and State have negotiated Memoranda of Understanding (MOUs) with both the ITU and the MHC to allocate and control costs associated with this event.

In preparation for the Plenipotentiary Conference, NTIA also will participate in the ITU's Administrative Council in the Spring of 1998. The Council will give further consideration to broad policy issues and to restructuring proposals that have been under consideration and debate throughout 1997. NTIA has advocated a stronger role for industry in ensuring that ITU continues to have an effective, efficient and useful role in global telecommunications policy. Decisions taken at the Council will require final action at the Minneapolis Plenipotentiary.

NTIA spectrum management experts, in conjunction with Motorola and ComSearch, successfully conducted a radio frequency spectrum management training seminar for 18 spectrum managers from 17 developing countries. The seminar is conducted annually in Washington under the auspices of the United States Telecommunications Training Institute (USTTI). The seminar is an industry and government joint venture that provides free training to spectrum professionals and regulators from developing nations. The seminar covered basic spectrum management and computer-aided techniques, development of commercial enterprises, and advanced spectrum management. The seminar fosters international dialog and cooperation, reinforces U.S. ties with foreign countries -- especially those

moving toward privatization and liberalization of their telecommunications markets -- and provides a forum to discuss national and international telecommunications and spectrum management issues.

NTIA experts also conducted a one-week radio frequency spectrum management training seminar in Tel Aviv, Israel for spectrum regulatory officials from Israel, Jordan, and the Palestine Authority. Following the seminar, NTIA continued to provide technical assistance to Israel on a number of spectrum management topics. And at the request of the newly-established radio frequency spectrum regulatory agency of the Republic of Panama, NTIA presented a radio frequency spectrum management training seminar in Panama. Under the sponsorship of the Panama Canal Commission, a U.S. federal entity, an NTIA expert drafted new regulations for telecommunications services in the Panama Canal.

Forty federal government employees attended a spectrum management seminar conducted by NTIA. The seminar is taught by NTIA and experts from other Federal agencies. A benefit of this annual seminar is that it permits the students to discuss and confer with senior officials, providing guidance on problem resolution, and it also enables NTIA to obtain a good understanding of the spectrum management problems being experienced in the field.

In 1997, NTIA completed a revision and expansion of the *Emergency Readiness Plan (ERP) for Use of the Radio Spectrum*. Upon final approval, NTIA will issue a CD-ROM containing the complete ERP including the certified database of wartime spectrum priority data. This plan and its associated database will be the basis for NTIA and the Federal government to exercise spectrum responsibilities during all types of emergency scenarios. In 1997, NTIA also completed a significant portion of the reviews of spectrum-dependent systems projected for use in a wartime emergency environment. In these reviews, the missions and priorities of systems support, the frequencies the systems are authorized to use in a wartime emergency, as well as other pertinent data were validated. After validation, the information was entered into the first-ever prototype electronic database addressing prioritized emergency requirements for spectrum use by Federal agencies in support of a national emergency.

Goal 3: Implement policy and plans to manage and conserve Federal use of the radio spectrum considering the national interest.

Managing the spectrum and making future spectrum plans requires technical engineering expertise. This expertise is used to ensure that the spectrum policies and rules and regulations required for proper spectrum management nationally and internationally are technically valid; to derive the necessary technical facts that will lead to resolution of spectrum issues and problems; provide a technical and engineering basis for future spectrum planning and standards; and provide new ways to adopt new spectrum efficient technologies so the Federal government can use the spectrum efficiently and effectively.

Spectrum Authorization and Coordination

To fulfill the Federal Government's needs for radio spectrum, NTIA's Office of Spectrum Management (OSM) maintains the Government Master File (GMF) of approximately 405,825 frequency assignments. There were approximately 145,443 requests for new assignment actions in 1997.

Fifty system reviews addressed conformance to frequency allocations, technical standards, and compatibility of operations of proposed systems with existing and planned uses. These reviews also include recommended corrections to be made so that these new systems will not cause or receive

interference to other users in the same radio environment. System reviews were split evenly between DOD and non-DOD agencies at 25. Systems included aeronautical, ship-borne, and land-based satellite systems, and various radiolocation and radio navigation systems. Over half of the systems reviewed were satellite systems and associated earth stations. The total cost of the systems reviewed exceeds \$3 billion.

NTIA reviewed and coordinated 103 foreign satellite systems in 1997, a substantial increase over the 72 foreign systems it coordinated in 1996. NTIA also submitted 47 U.S. satellite systems to the ITU to protect these systems from interference from other foreign countries and provided other countries coordination for their satellite systems. Thirty-five U.S. systems were submitted in 1996.

NTIA developed an automated spectrum management system to provide a standardized method for Federal agencies to submit applications for spectrum support, technically select spectrum that is interference free, and validate that the spectrum requested is within the rules and regulations governing spectrum authorization. The Joint Spectrum Management System for Windows (JSMSw) was released to the Federal agencies this year. The goal is to complete the transition to an all-electronic process in 1998 throughout the entire frequency assignment coordination system.

Interdepartment Radio Advisory Committee (IRAC)

The IRAC is comprised of representatives from the 20 Federal agencies that are major spectrum users and is an integral part of the spectrum management process. This committee provides advice to NTIA on spectrum management, resolution of various spectrum issues and problems among Federal agencies, between the government and non-government sectors through the FCC, and internationally through forums such as the ITU. The IRAC is chaired and administered by NTIA. The IRAC and its subcommittees and ad hoc groups conducted approximately 139 meetings and addressed over 4,170 documents in 1997. These documents dealt with various Federal, non-Federal, and international spectrum management, policy, and planning issues and problems.

Spectrum Reallocation

The Spectrum Reallocation Report of 1995 identified 235 MHz of radio spectrum for transfer from Federal government use to private, commercial use. The final reallocation plan was developed in consultation with the affected Federal agencies, the Federal Communications Commission, and the public over an 18-month period. This transfer of spectrum, while expected to cost Federal agencies over \$500 million, will provide U.S. industry and the public with important new spectrum resources for emerging telecommunications technologies. NTIA continued with implementation of its plan in 1997, releasing an additional 25 MHz to the FCC for private sector use. Another 70 MHz will be made available by 1999 and the remainder by 2004.

The Balanced Budget Act of 1997 calls for NTIA to identify an additional 20 MHz of Federal spectrum for reallocation to the private sector. NTIA began intense negotiations with IRAC agencies to identify spectrum that provides a reasonable balance between Federal impact and potential benefits to the public. The final report is due in February 1998. Efforts on the 20 MHz reallocation as well as other requirements of the Act will continue in 1998.

The FCC completed a rulemaking in 1997 to authorize a whole new class of unlicensed radio devices that will provide high speed access to the National Information Infrastructure. The spectrum for these devices is currently used by Federal government systems including high powered navigation and radar

systems. NTIA provided detailed filings with the FCC and coordinated extensively with industry groups to assure that these systems can prosper while at the same time minimize impact to and from Federal systems. The final FCC Memorandum Opinion and Order drew extensively from NTIA comments in reaching the final decisions.

Public Safety

NTIA and the FCC established the Public Safety Wireless Advisory Committee (PSWAC) in 1995 consisting of over 400 representatives from the nation's Federal, State and local public safety community. In the fall of 1996, the PSWAC provided NTIA and the FCC a 760 page report on the operational, technical and radio spectrum requirements of public safety through the year 2010. NTIA and the FCC are addressing the recommendations made by the PSWAC. A follow-on effort was proposed by Assistant Secretary Irving, calling for the establishment of a National Public Safety Council which will continue the information flow and strengthen the relationship among public safety entities at all levels, and assist NTIA and the FCC in implementing the PSWAC recommendations.

Spectrum Use

NTIA updated a number of reports summarizing the Federal government's use of the spectrum. They include: (1) *How the Federal Government Uses & Manages the Spectrum*, which describes the national spectrum management process and displays the use of the spectrum by the Federal agencies; (2) *Spectrum Use Summary (137MHz - 10GHz)*, which provides an overview of Federal and non-Federal spectrum use in approximately 102 bands; (3) *Spectrum Information Fact Sheet* which depicts the Federal government's spectrum management functions, spectrum allocated to the government and private sector, and government investment in spectrum; and (4) *United States Frequency Allocations Chart* which displays the distribution of spectrum among 33 radio services, the nature of use (primary, secondary or permitted), and whether the allocated band is government or non-government exclusive or shared.

NTIA completed the consolidation of its personnel resources in the greater Washington, D.C. area into a central location. NTIA's Computer Services Division and its Spectrum Engineering and Analysis Division, a group of some 50 persons and the home for NTIA's computer automated frequency management records system, was relocated to the NTIA headquarters in Washington, D.C. NTIA continued the development necessary to move processing of frequency applications from its mainframe computer system to networked workstations. The migration is expected to be completed in 1998.

Goal 4: Promote applications of advanced telecommunications and information technology that benefit all Americans.

Starting in September, NTIA initiated a number of projects that look toward the future of telecommunications and explore policy questions that are on the horizon. In this regard, NTIA has launched a series of policy forums under the title "New Frontiers on the Information Superhighway." This series is intended to identify and describe new technologies that offer the promise of competition, innovation, investment and choice for consumers. The first of these forums explored the policy issues of Internet Telephony. The second forum addressed the potential for wireless technology as a complement or competitor in local telephone markets. Both forums provided live broadcast of images and audio feeds over the Internet. Forums planned for 1998 will focus on cable television, satellite services, and advanced television.

NTIA has played a leading role in promoting and building international consensus for the core principles underlying the development of the Global Information Infrastructure (GII). The adoption of these key principles by the world community will help increase competition in the global marketplace and open foreign markets for U.S. companies. Building on the GII principles, NTIA contributed to the development of the Administration's policy paper, "A Framework for Global Electronic Commerce," released by the President on July 1, 1997. NTIA subsequently assisted in advancing the Administration's policies intended to promote the global development of electronic commerce through consultations with other governments in bilateral and multilateral fora.

NTIA played the lead role in drafting the U.S. Government response to the Organization for Economic Cooperation and Development's (OECD) GII Report, which was presented at the February 1997, meetings of the OECD's Working Party on the Information Economy (WPIE), the Global Information Infrastructure/Global Information Society (GII/GIS) Experts Meeting, and the Information, Computer and Communications Policy (ICCP) Meeting. Preparations involved outreach to a greatly expanded group of U.S. companies, and coordination of U.S. Government and private sector views on GII policy and implementation. NTIA continued to have the lead in drafting final U.S. Government and private sector comments on the GII/GIS Report and the Executive Summary, which were presented at the OECD Ministerial in May.

NTIA promotes the application of telecommunications and information technology to benefit all Americans. NTIA's Office of Telecommunications and Information Applications supports the Administration's efforts through the National Information Infrastructure (NII) to use new telecommunications and information technologies to connect our citizens to one another, to services, and to information. While the private sector is building the NII, Federal Government actions are necessary as a catalyst to facilitate and encourage private development of the NII. NTIA continues to demonstrate the benefits of the NII and promote its development through its management of the Telecommunications and Information Infrastructure Assistance Program (TIIAP).

TIIAP is a highly-competitive, merit-based program that brings the benefits of an advanced national information infrastructure to communities throughout the United States. TIIAP provides matching grants to nonprofit organizations such as schools, libraries, community organizations, hospitals, police and fire departments, and state, local, and tribal governments that demonstrate innovative applications of new information and communications technologies.

In 1997, fifty-five public institutions, competitively selected from more than 900 applicants, were awarded \$20.9 million in federal matching grants. Projects were selected on the basis of their ability to serve as models that can be replicated across the country. The grants were awarded in five categories; some examples of the awards include:

Education, Culture and Lifelong Learning: a Jackson, Mississippi, project will put technology into the children's wing of a hospital to allow children who are chronically ill to communicate with their teachers, classmates, friends, and family;

Public and Community Services: a Philadelphia, Pennsylvania, grant will link 125 family-centered, non-profits and government agencies to help people transition from welfare to work, and access job training;

Health: a Knoxville, Tennessee, grant will use technology to provide initial care for trauma patients by putting technology to work in ambulances, rural emergency departments, and a Level 1 Trauma Center;

the grant is expected particularly to help save the lives of people involved in rural highway accidents;

Public Safety: a Chicago, Illinois, grant hopes to reduce the number of crimes committed by youths by linking the juvenile court system with social service agencies to help ensure that the youths get the service that is ordered by the court; and

Community-Wide Networking: a Spokane, Washington grant will enhance a local community network to spur economic development by creating on-line career centers with innovations such as virtual job shadowing.

Over the past four years, the program has awarded \$100 million to 332 projects, which was matched by more than \$150 million in non-federal funds to invest in the development of the NII. Connection of these public institutions to the NII by the year 2000 is one of this Administration's priorities. The TIIAP program supports this goal by demonstrating effective, efficient models for using the NII to improve lifelong learning, health, safety, and other public services.

In 1997, NTIA released *Networks for People: TIIAP at Work*, a report which describes early experiments in building and using the information infrastructure. The report describes the challenges involved in developing a more seamless and universal information system, and in sustaining projects that enrich the community. The TIIAP projects detailed therein illustrate the use of telecommunications tools to benefit society and to extend those benefits to disadvantaged individuals and communities. NTIA brought together over 500 people from public and private organizations for a conference at which the report was released and the findings of TIIAP-funded projects were discussed.

In addition, NTIA contracted with Westat, a research firm, to conduct an assessment of the grants awarded by the TIIAP program in its first two years. The assessment will assist the program in gauging its effectiveness and will facilitate ongoing program evaluation.

Goal 5: Act as a catalyst for domestic telecommunications and mass media infrastructure development.

NTIA's research laboratory, the Institute for Telecommunication Sciences (ITS) in Boulder, Colorado, performs state-of-the-art telecommunications research to support NTIA and Department of Commerce goals. ITS also conducts specific research under reimbursable agreements with other Federal agencies and under cooperative research agreements with private sector partners. ITS is an active contributor to many agency endeavors, including those dealing with spectrum efficiency and sharing issues, broadband wireless technology issues, advanced telecommunication standards, and Internet technology issues.

Spectrum Research and Engineering

ITS undertook research and engineering studies in coordination with NTIA's OSM to further expand applied knowledge of the radio frequency spectrum. Results of this research were spectrum use concepts and models that led to more efficient industry and Government use of the radio frequency spectrum. ITS performed spectrum resource studies as required to ascertain current and future Federal use of the spectrum and determine where significant improvements in utilization appear possible. Additionally, ITS operated a mobile capability, the Radio Spectrum Measurement System (RSMS), to measure and analyze the actual use of the spectrum. This system is used to perform measurements in the land mobile and radar bands at selected sites, and make other specialized measurements as necessary to ensure compliance with frequency assignment rules and regulations. ITS completed selected site measurements

in coordination with OSM, at locations in Baltimore, Boulder, Savannah, and New Orleans. The Institute also completed interference analyses of Government systems with private sector systems in selected locations, and performed measurements to obtain necessary technical information for application to spectrum issues and problems, and to aid spectrum planning and policy. Measurements were completed on Space borne Radar Compatibility with Terrestrial Radar; Radar Emission Spectrum Measurements; Narrowband Maritime Radio Tests; VHF Maritime Receiver Standards; RF Lightbulb Emissions; and Spectrum Reallocation Support.

ITS also undertook research and engineering to support the development of wireless technologies such as personal communication services (PCS) and local multipoint distribution services (LMDS). Measurements and modeling of the propagation of radio waves on short paths in selected environments are crucial for the planning, development, and deployment of commercially viable systems. ITS supported the development of wireless local area networks through models supported by measurements that enable the accurate prediction of broadband communication link performance. These models serve as a basis for system planning as well as spectrum regulation. Results also assisted companies in assessing the value of the radio spectrum in preparation for FCC auctioning. Finally, ITS developed fundamental data and more accurate modeling of radio propagation that will lead to improved methods of planning spectrum sharing for various services including advanced television (ATV) systems.

Telecommunications Standards Leadership and Research

During 1997, at the request of the Department of State, the Institute continued to provide leadership in the ITU and was responsible for coordinating U.S. contributions to international standards on Integrated Services Digital Networks (ISDN). ITS also provided leadership on ISDN performance standards development and contributed to related multimedia performance standards development. ITS continued these important leadership activities, and conducted focused research supporting the development, demonstration, and implementation of ISDN performance standards promoting U.S. domestic competition and international trade objectives.

ITS' international standards activities were complemented by active involvement in the development of U.S. standards for ISDN and advanced packet-switching networks within the American Standards Institute (ANSI)-accredited T1 (Telecommunications) Standards Committee. ITS developed formal contributions proposing technical solutions to some of the most compelling issues facing U.S. telecommunications planners. Examples included interoperation of multi-vendor systems employing various transmission media (cable, microwave, fiber, satellite) in a competitive environment, and the key ISDN problem of economical resource sharing among integrated services. ITS' results are promoting competition and innovation in the provision of broadband digital services and are ensuring that emerging U.S. ISDN standards are consistent with a competitive market environment, with the Administration's NII and GII objectives, and with applicable NTIA and FCC policy guidelines.

Additionally, ITS undertook telecommunications research and engineering activities directed toward the development, implementation, and promulgation of user-oriented performance measures for integrated data, audio (including voice), video, and multimedia communication equipment and services. ITS continued to apply its state-of-the-art ISDN performance measurement laboratory in validating and optimizing telecommunication performance standards. This research is aimed at developing user-oriented, technology-independent performance parameters and measurement methods for digital audio and high-speed data communication services. ITS continued related research in digital video communication performance supporting such emerging and future applications as video telephony and teleconferencing, computer-aided design and manufacturing, and interactive video distribution, and is continuing to integrate its prototype data, audio, and video performance measures to provide multimedia test capabilities. These user-oriented test capabilities will be extremely valuable in implementing and optimizing the NII and GII.

Other Federal Agency Support

Under other agency reimbursable work agreements, the Institute provided telecommunications planning assistance to a variety of Federal agencies. For example, ITS completed a national plan, approved by the Secretary of Transportation, for the augmented Global Positioning System (GPS) to meet the navigational and positional needs of all modes of transportation. ITS also provided support to the Federal Highway Administration in the development of Intelligent Transportation Systems (ITS), formerly the Intelligent Vehicle Highway System (IVHS). Leadership of the IEEE Vehicular Radar Standards subcommittee for developing collision avoidance radar standards for the Nation's highways was also provided.

ITS also provided key technical support to the work of the Federal Railway Administration in improving railway traffic management and safety, to the National Communications System in enhancing communications survivability during national emergencies, and to other Department of Defense and Security agencies in improving their strategic and tactical communications capabilities. These efforts support a key NTIA responsibility of making available its laboratory's telecommunications expertise to other Federal agencies in a centralized, cost-effective manner.

Industry Outreach

The Federal Technology Transfer Act of 1986 (FTTA) allows Federal laboratories to enter into cooperative research agreements with private industry, universities, and other interested parties. The law was passed in order to provide labs with legal authority to enter into these arrangements and thus encourage technology transfer from Federal labs to the private sector. NTIA established a core telecommunications research expertise that is accessible to both the public and private sectors and is actively engaged in technology transfer and commercialization efforts by fostering cooperative telecommunications research with industry where benefits can directly facilitate U.S. competitiveness and market opportunities. Through cooperative research and development agreements (CRADAs) with industry, the Institute applies its expertise to practical problems in telecommunications today.

ITS continued work on several CRADAs with the private sector (e.g., U S WEST Advanced Technologies, Inc.; American Automobile Manufacturers Association; GTE Laboratories; Integrator Corporation; Industrial Technologies, Inc.) to design, develop, test, and evaluate advanced telecommunications concepts in direct support of the NII and GII. Data derived from these CRADAs provide a foundation for domestic and international standards development and efficient allocation of radio frequency spectrum resources. To date, major contributions to personal communication services (PCS) and LMDS technologies have been and will continue to be carried out under these CRADAs to aid U.S. efforts to rapidly introduce new communications technologies for the benefit of society. ITS is in active negotiations with a major test equipment manufacturer to enter into commercial license agreements using an NTIA-patented advanced perception-based audio-quality measurement system. These CRADAs, in whole or part, also facilitate telecommunications standards development for advanced systems implementation.

In addition, ITS continued its efforts to expand technology results to the larger user community. One way was through the Telecommunication Analysis Services (TA Services) program, an on-line dial-up service that currently reaches over 300 government and private sector users across the nation and makes available the latest models and tools developed by ITS in the telecommunications field. In 1997, the Institute expanded the availability of these services through greater outreach efforts, e.g., National Association of Broadcasters Conference demonstrations, and by making available the latest models (e.g.,

PCS propagation) that will be useful to telecommunications systems planners and designers.

Together with the Commerce Department's Bureau of Export Administration and the Technology Administration, NTIA is working on the organizational and resource recommendations for implementing the *Report of the President's Commission on Critical Infrastructure Protection*.

Goal 6: Promote the free flow of information and diversity of voices in the nation's electronic media.

NTIA has taken a leading role in Internet related issues, including the development of Electronic Commerce. NTIA staff participated in developing the President's E-Commerce initiative. NTIA is committing increased resources to governance and content issues related to the Internet. In June 1997, NTIA released *Privacy and Self Regulation in the Information Age*, in which prominent experts address issues surrounding self regulation and privacy and how best to develop and implement self-regulatory approaches to protecting privacy.

A notice requesting comments on issues related to systems for registering Internet domain names was published in the *Federal Register* on July 2. More than 500 comments were filed electronically in that inquiry and are available to the public on the web site established for this proceeding at <http://www.ntia.doc.gov/ntiahome/domainname/domainname.htm>.

NTIA also played a major role in providing U.S. Government input to the OECD for the inventory of countries' laws, regulations, and policies relevant to the Internet beginning in February. At the conclusion of the inventory project, as the U.S. Government lead on Internet content at the October meeting of the Ad Hoc Group on Internet Content, NTIA negotiated a compromise agreement regarding future work, and refocused the delegates on a joint government-industry forum in March 1998, featuring industry self-regulation initiatives. NTIA also played an important role in creating a new mandate for the Information Security and Privacy Experts Group, recommended future OECD work on privacy, domain names, and electronic commerce, and helped coordinate the November 19-21 OECD conference in Turku, Finland, on electronic commerce, entitled, "Dismantling the Barriers to Global Electronic Commerce."

NTIA coordinated with the White House to organize the July 16 public forum that included industry leaders and groups representing teachers, parents, and librarians to discuss ways, including new technologies, that parents can screen inappropriate material on the Internet. The President has directed the Office of Management and Budget, working with the Department of Commerce and the Government Information Technology Services (GITS) working group, to develop and implement policies and procedures for labeling Executive branch World-Wide Web sites. In 1998, NTIA will work with industry to encourage adoption of self-regulatory regimes and will hold a meeting to explore and showcase the extent to which effective self regulation has been deployed in the private sector to protect privacy. NTIA also will issue a Discussion Paper on the transition to self-governance of Domain Name Service.

Continuing to provide support to the Office of the Vice President, NTIA researched and articulated policies for the Administration on several major mass media issues. Most notable were the "V-Chip," mandated by the Telecommunications Act of 1996, which will allow parents to screen violent and other labeled programming from their children; rules requiring broadcasters to air children's television programs; and rules regarding political statements made by candidates.

NTIA filed formal written comments with the FCC on the allocation of spectrum for digital television broadcasting. Moreover, NTIA now has the responsibility for staffing the President's Advisory Committee on the Public Interest Obligations of Digital Television Broadcasters. NTIA made substantial contributions to the conceptualization of the issues and to the background materials for the Committee, whose first meetings were organized by NTIA staff and held in Washington, DC in October and December. The Advisory Committee is expected to issue a report in June 1998.

NTIA's Public Telecommunications Facilities Program (PTFP) annually awards grants public broadcasting and to other noncommercial entities for the purchase of, or in some cases to plan for the eventual purchase of telecommunications equipment. In 1997, PTFP issued grants totaling approximately \$14.2 million to 97 recipient organizations in 39 states, American Samoa, and the District of Columbia. The grants enable public broadcasting organizations, as well as many nonbroadcast operations, to buy equipment to activate new services, extend the range of present services, and improve existing broadcast facilities.

PTFP has been the sole source of federal funding for catastrophic loss and urgently needed replacement equipment. Communities hit by recent hurricanes, fire, wind storms, and earthquakes would be without public television and radio if it were not for the program. In 1997 for example, NTIA awarded a grant to replace the radio transmitter of KBRW-AM, Barrow, Alaska, that was destroyed by fire.

In total for 1997, PTFP awarded 37 public radio grants, 46 public television grants, and 14 distance learning grants. The awards will extend a public radio signal to approximately 1.1 million presently unserved persons and a public television signal to approximately 50,000 unserved persons.

Other examples of this year's awards include a grant to establish the first public radio service on the Hopi Indian Reservation in Arizona. Another grant will allow station KCET-TV, Channel 28, Los Angeles, to replace its master control and routing switcher equipment with equipment that has digital transmission capability, helping KCET lead the way in public television stations' efforts to meet the FCC's digital conversion schedule. Another award will fund the installation of diverse digital video interconnection equipment, which will allow the Alliance for Higher Education, Dallas, Texas, to use telephone-delivery technologies to bring video distance learning course work to institutions of higher education, K-12 school systems, health care providers and industry statewide.

NTIA released the 1997 *Minority Broadcast Ownership Report* on September 11. The report identifies owners of radio and television by minority group and analyzes ownership changes over time.

Goal 7: Promote U.S. telecommunications and information competitiveness abroad.

NTIA formulates and articulates policy alternatives for Executive Branch positions on major international telecommunications and information issues, and promotes U.S. policies to improve the competitiveness of the U.S. telecommunications industry in international markets.

Sixty-nine countries adopted the World Trade Organization (WTO) Agreement on Basic Telecommunications on February 15, 1997. This landmark agreement, which NTIA helped negotiate, covers over 95 percent of world revenues for basic telecommunications services -- a \$675 billion industry -- and ensures that U.S. companies can compete against and invest in telecommunications

companies around the globe.

As part of the interagency team, NTIA will continue to work on implementation of the agreement and assist in monitoring the compliance of countries under the agreement. In particular, NTIA has taken a leadership role in designing an implementation plan to assist developing countries in meeting their obligations under the agreement.

NTIA filed comments in the FCC's pending proceeding to revise existing foreign-entry regulations consistent with the WTO agreement. NTIA's comments supported the FCC's proposals to refrain from applying the "equivalent competitive opportunities" test to applicants from countries that have signed the WTO agreement. NTIA also supported the retention of the Commission's public interest standard, which will assist the Commission in applying the appropriate regulatory safeguards to prevent anti-competitive conduct.

Under NTIA's leadership, the European Union (EU) Commission's proposal for the 1997 Global Standards Conference was successfully restructured to feature the role of industry, rather than governments, in developing and implementing global standards for the further development of the GII. NTIA led the U.S. preparatory process, coordinated U.S. Government participation with industry, and represented the Department of Commerce on the U.S. delegation to the Conference. NTIA will continue to work closely with industry on proposals for follow-on activities in the global standards area.

The Global Information Networks Conference provided Commerce Secretary Daley with an opportunity to promote the Administration's policy on electronic commerce to more than thirty ministers from Europe, Canada, and Japan. NTIA played a key role in developing the Administration policy on this issue and in coordinating Secretary Daley's participation in the Conference. The Conference, which was hosted by Germany and the European Union, took place in Bonn on July 6-8. Secretary Daley spoke on "The Framework for Fostering Global Electronic Commerce." Other speakers from government and industry echoed the U.S. call for a market-driven, consumer-friendly environment for the development of electronic commerce. Issues for future resolution include encryption policy, selection of the forum for global standards coordination, and the creation of or changes in existing commercial laws and regulations to fit the needs of electronic commerce.

Together with other Executive Branch agencies, the FCC, and industry, NTIA continued to advocate pro-competitive accounting rate reform through participation in meetings of multilateral organizations and bilateral meetings with individual foreign governments. NTIA also coordinated its positions on a pending regulatory proceeding before the FCC to revise existing benchmark settlement rates with industry and other Executive Branch agencies, and filed formal comments in the proceeding before the FCC.

NTIA promoted additional competitive entry for new U.S.-based satellite systems into the international satellite services marketplace. Activities included NTIA's expert testimony before committees in both the House and Senate; advocacy within an interagency group designing U.S. policy for reform of the Intergovernmental Satellite Organizations; providing, with the FCC and Department of State, statutory oversight of the Comsat Corporation's activities within the INTELSAT and Inmarsat intergovernmental organizations; and, participation in working groups and plenipotentiary assemblies of both INTELSAT and Inmarsat, where NTIA advocated U.S. pro-competitive positions.

African Developments

For the past three years, NTIA has had one of its policy specialists on detail to US AID and stationed in Gabarone, Botswana. From that post, the NTIA staff member is responsible for coordination with the ministers of telecommunications, other ministry officials and local private sector representatives for the twelve nations of the Southern Africa Development Community. In this capacity, NTIA helps with designing, planning and implementation of liberalization and privatization within the region's telecommunications sector. In addition, NTIA helped to coordinate a regional African policy symposium, "Private Participation in Telecommunications: A Symposium for Policy Makers," held July 14-16 in Botswana. The symposium emphasized that progress in improving telecommunications in Africa will not be possible without private participation in the sector.

Asian Developments

During 1997, NTIA actively participated in both working-group level meetings and preparations for Ministerial meetings in the Asia Pacific Economic Cooperation (APEC) process. The eighteen APEC member/economies hope to liberalize the telecommunications and information sectors by 2010 for developed economies, and by 2020 for developing economies. NTIA acted as chief spokesperson in the APEC Telecommunications Working Group's Steering Group on Development Cooperation, and successfully gained endorsement for a Spectrum Management & Policy database, now on the Internet at <http://www.apec-wg.com>, and for an Asia Pacific Information Infrastructure Development Assistance catalogue.

In conjunction with other Commerce Department units and the Telecommunications Industry Association, NTIA coordinated the first China-U.S. Telecommunications Summit, held October 8-11 in Dalian, China. The Summit successfully brought together senior Chinese and U.S. government telecommunications officials, Chinese provincial telecommunications officials, and U.S. companies seeking to improve access to the burgeoning Chinese marketplace, valued at over \$1 trillion. Commerce Secretary Daley led the U.S. Government delegation which included Assistant Secretary Irving and other senior officials from the Commerce Department, along with senior leaders from the White House, the State Department, the FCC, and the Export-Import Bank.

Latin American Developments

NTIA participated in the Permanent Executive Committee of the Inter-American Telecommunications Commission to discuss regulatory and policy matters including accounting rates, universal service, and the global information infrastructure.

NTIA, State, and the FCC are negotiating a Direct-to-Home (DTH), Direct Broadcast Service (DBS), and other Fixed Satellite Services Agreement and Protocol with Argentina.

In conjunction with the International Trade Administration (ITA) and the Telecommunications Industry Association (TIA), NTIA began organizing the fourth Latin American Telecommunications Summit (LATS) to be held in the spring of 1998 in Argentina. Representatives from approximately thirty U.S. telecommunications equipment manufacturers and service providers are expected to participate in LATS. Telecommunications Ministers and senior government officials from the largest telecommunications markets in Latin America will participate. LATS provides the opportunity for industry representatives and senior government officials to discuss key telecommunications issues facing the region. LATS also provides the opportunity for equipment manufacturers and service providers to promote their products in the Americas. Past LATS have successfully generated hundreds of millions of

dollars for U.S. industry.

NTIA received a grant from USAID to study rural telecommunications development programs in Peru and Chile to better understand the problems faced by rural areas and how these two countries address these problems. The study focuses on the Peruvian (FIDEL) and Chilean (FDT) telecommunications development funds, their unique and innovative approaches to telecommunications development, and the lessons learned from the projects financed by these funds. The study will review the needs of and impediments to rural communications service, technologies available to address these needs, and the overall results of the funds.

NTIA Gold Medal Winner

Mr. William T. Hatch of NTIA's Office of Spectrum Management was awarded a Gold Medal by the Secretary of Commerce in recognition of his development of national and international spectrum management policy supporting U.S. proposals to World Radiocommunication Conferences leading to the development of innovative terrestrial and satellite based communications services. Through his efforts, the United States has achieved significant results in these conferences, leading to improved national and international competitiveness for the U.S. telecommunications industry.

NTIA ON THE WORLD-WIDE WEB

To expand electronic access to public information, NTIA established one of the first Federal government World-Wide Web (WWW) servers (<http://www.ntia.doc.gov>). All of NTIA's publicly available documents are posted on this web site. The following general principles guide NTIA's managers on electronic information dissemination; these principles apply to all NTIA electronic information dissemination efforts, regardless of specific form.

NTIA On-Line Information will be:

1. Designed for the external user; *i.e.*, constituent ease of use, interactivity, and usefulness of the information will be the overriding priority.
2. Accurate, Timely, Complete, and Relevant.
3. Information should be available on-line no later than when it is available in hard copy and preferably before the hard copy is available.
4. Limited to organizational and programmatic information.

NTIA's efforts to develop this site were recognized with Vice President Gore's Hammer Award.

Comments

NTIA welcomes comments on its activities and programs. To offer suggestions or obtain further information, please contact Sarah Maloney or Charles Franz at 202-482-1835 or send e-mail to <smaloney@ntia.doc.gov> or <cfranz@ntia.doc.gov>.

Copies of documents cited in this report are for sale by the National Technical Information Service, Springfield, VA (703) 487-4650.



NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
ANNUAL REPORT
1996

Mission

The National Telecommunications and Information Administration (NTIA) is the principal adviser to the President, Vice President, and Secretary of Commerce on domestic and international communications policy. NTIA's mission is to promote the development of an advanced telecommunications and information infrastructure that efficiently serves the needs of all Americans, creates job opportunities for American workers, and enhances the competitiveness of U.S. industry in the global marketplace.

In fulfilling its mission, NTIA: (a) promotes national policies to increase competition and efficient investment in telecommunications and information industries, enhance consumer welfare and economic and social opportunities for all, and remove impediments to the growth and vitality of these sectors; (b) supports the development of a National Information Infrastructure (NII) that will be accessible to all Americans; (c) administers the Telecommunications and Information Infrastructure Assistance Program (TIIAP), which helps to provide access to advanced telecommunications services; (d) manages the Public Telecommunications Facilities Program (PTFP), which provides funding to extend the reach of public television and radio; (e) sets policies for efficiently and effectively managing the Federal use of the radio spectrum; and prepares for international radio spectrum conferences of the International Telecommunication Union; (f) advocates international telecommunications policies that will help open international markets and promote the interests of the United States; and (g) engages in technical research to improve telecommunications system planning, design, and evaluation and to support government and industry efforts in these areas.

NTIA operated in FY 1996 with a total budget of \$66.4 million and 300 FTEs. The agency adjusted to reduced operating funds through management decisions to limit hiring and discretionary spending (travel, training, promotions, etc.). These decisions, along with employee attrition, allowed NTIA to complete the year without a reduction in force.

NTIA's accomplishments in 1996 contributed to the fulfillment of the agency's mission. Following are the highlights of these activities.

DOMESTIC POLICY

NTIA serves as the principal Executive branch adviser to the President on domestic and international communications and information policies. To fulfill this responsibility, NTIA develops and articulates Administration policies on domestic telecommunications policy issues; analyzes and proposes

Administration positions on legislation and regulations; and represents the Administration in policy forums, conferences, and symposia. In addition, NTIA promotes minority participation in telecommunications through its Minority Telecommunications Development Program (MTDP). The agency promotes the Administration's priorities through major filings with the Federal Communications Commission (FCC) on a wide range of topics, a continuing emphasis on universal service and the public good, and support for the application of new technology.

On February 8, 1996, President Clinton signed the first most significant telecommunications reform legislation in over sixty years, fulfilling one of the President's major first term goals and facilitating development of the National Information Infrastructure. As the first revision of the Communications Act of 1934, the Telecommunications Reform Act of 1996 is intended to increase technological innovation, competition, and consumer choice in the industry. The law is now being implemented through rulemakings before the Federal Communications Commission (FCC). NTIA played a substantial role in the enactment of the Telecommunications Reform Act of 1996 and is actively participating on behalf of the Administration in the appropriate FCC proceedings. A listing of NTIA filings is included as Appendix I. Appendix II contains a listing of testimony and speeches delivered in 1996. A brief description of major domestic policy activities follows.

Universal Service

Extensive debate is underway in the United States and numerous other countries on how to define universal service and how to promote open access to it, particularly in the context of further liberalization in telecommunications markets and progress toward realizing the goals of the National Information Infrastructure (NII) and similar foreign infrastructure initiatives. As a general proposition, the Telecommunications Act of 1996 mandates that communications be made available to all people of the United States without discrimination. In addition, it seeks to ensure that schools and libraries (and -- to a lesser extent -- rural health care facilities) become connected to the NII through preferential rates for universal services.

NTIA, in conjunction with the Department of Education and the Department of Agriculture, proposed a plan for implementing the new universal service support mechanisms created by the Telecommunications Act of 1996. The plan, referred to as the E-rate (education rate), would guarantee universal access to telecommunications and information services for every school and library in America. It provides a framework for ensuring that access to these services for schools and libraries is affordable. President Clinton personally endorsed the plan, which was adopted in large part in recommendations by the Federal-State Joint Board on Universal Service now being considered by the FCC.

NTIA has also urged the FCC and States to adopt universal service policies that ensure a basic package of affordable telecommunications services for all Americans while fostering meaningful competition in the telecommunications marketplace. NTIA's policy proposals supported barring local telephone companies from disconnecting local service for non-payment of long distance bills; encouraging low cost (or even no-cost) toll restriction services (allowing incoming toll calls only); exploring wireless and other technologies as a means of reaching unserved areas and low income, highly mobile persons; and promoting provision of telephone and computer service to more individuals by community access centers. NTIA continues to participate actively in the forums where this plan is being considered.

NTIA and the Benton Foundation jointly sponsored the "Up for Grabs: Communications Practice and Policy in the Public Interest" conference in June. The conference brought together policy makers, industry representatives, and community service providers to discuss applications of advanced telecommunications technology in improved health care, education and civic participation.

Auctions

NTIA was instrumental in the advent of spectrum auctions and the development of electronic bidding mechanisms used by the FCC. NTIA's multi-year development and advocacy of a policy to permit the FCC to use auctions in the assignment of radio frequency licenses made possible the first-ever such auctions in 1994. These auctions improved significantly the FCC's license assignment process and also brought revenue to the U.S. Treasury, with high bids to date totaling over \$23 billion.

Current issues being examined by NTIA include the desirability of using auctions to award licenses for particular services, as well as the ways in which the current auction format can be modified to increase an auction's closing speed, increase auction revenue, and enhance economic efficiency. NTIA is also analyzing the desirability of granting license holders greater latitude in the manner in which they may use their spectrum. Also in 1996, NTIA announced that it intends to relinquish the Federal Government's primary status on 125 channels inside the 220-222 MHz band. These channels are currently allocated equally to the Federal Government and to private users. NTIA recommended that the FCC adopt a combinatorial approach to auction the 220-222 MHz band for commercial mobile services, as an improvement in auction methodology.

Community Wireless Networks

The FCC issued a Notice of Proposed Rulemaking recommending that some spectrum be set aside for use by nonlicensed multimedia wireless network devices. The proposal, when implemented, is expected to provide opportunities for entities such as schools, libraries, and businesses to make wireless network connections at a relatively low cost. NTIA supported the proposal because of its potential for meeting the Administration's goal of expanded opportunities for Americans to gain access to telecommunications services by the year 2000. NTIA also made recommendations to lessen the potential for nonlicensed users to interfere with critical Federal operations. NTIA supported shared use of government spectrum for the development of these unlicensed NII/Supernet devices, which can be used to provide low-cost community networking services.

Increased Competition and Technological Innovation

NTIA successfully advocated domestic policies to increase competition and technological innovation. NTIA opposed petitions to the FCC to regulate firms that sell software enabling voice communications by Internet users. NTIA submitted comments in the FCC's proceeding addressing proposals for a transition from analog to digital television. The FCC is deciding how unneeded analog spectrum will be allocated and whether assignment would be by competitive bidding. The comments urged retention of free TV for the public, while suggesting an appropriate transition for broadcasters to move from analog to digital transmission.

Children's Television

NTIA filed in the FCC's rulemaking proposing to strengthen broadcasters' statutory obligation to air educational children's television. The President and NTIA's Assistant Secretary both submitted comments to the FCC in September 1995, urging strengthening of those requirements to include at least three hours per week of educational children's programming. The broadcast industry agreed to the 3-hour per week requirement.

Privacy

In response to the growing privacy concerns of American consumers, NTIA released a White Paper, "Privacy and the NII: Safeguarding Telecommunications-Related Personal Information." This White Paper proposes a framework for developing minimum privacy standards that communications and information service providers, such as telephone companies and video and on-line service providers, would use to protect personal information supplied by customers subscribing to and using their services.

Since issuing the White Paper, NTIA has worked with private sector companies and trade associations to encourage adoption and implementation of meaningful self-regulatory privacy policies. NTIA also issued a "Call for Papers" to prominent experts asking them to address different aspects of privacy and self-regulation and how best to develop and implement self-regulatory approaches to privacy. NTIA is currently collecting these papers and intends to conduct a public forum in early 1997 to discuss these issues. Through these and other initiatives in 1997, NTIA will continue to promote and work toward acceptance of self-regulatory privacy frameworks.

NTIA, in cooperation with other U.S. government agencies, is also engaged in bilateral discussions with the European Union (EU) about its privacy directive which is due to take effect in 1998 and which could have significant implications for trade between the United States and the EU's fifteen Member States. We are exploring with the EU how they intend to implement the directive and evaluate the adequacy of data protection outside the EU, as well as educating them about the U.S. approach to privacy. In addition, NTIA is working cooperatively with other nations in such forums as the Organization for Economic Cooperation and Development (OECD), emphasizing the need to develop a balanced privacy policy -- one that preserves the individual's right to privacy while maintaining the free flow of information across national borders.

Minority Telecommunications Development Program

NTIA established the Minority Telecommunications Development Program (MTDP) in 1978 to develop programs and policies that increase minority ownership of broadcast and telecommunications businesses. MTDP provides policy input for the development of legislation and regulations that affect minority business participation in the telecommunications and information industries. The program also promotes opportunities for small, minority and women-owned businesses in the telecommunications and information industries.

For the last six years NTIA has collected statistics on minority ownership of commercial broadcast properties and released its findings in a report. The 1996 report entitled, "Minority Commercial Broadcast Ownership in the United States," provides an analysis of several factors including financing, legislation and policies that affect minority ownership. MTDP provides the only data of its kind on minority ownership. Last year minority ownership in the broadcast industry remained stagnant; only 2.9% of broadcast stations in the United States are owned by minorities.

MTDP's On-Line Resource Center provides centralized access via the Internet to information on telecommunications financing, business counseling and training, emerging technologies, new business opportunities, telecommunications legislative and policy issues that can help to promote greater economic participation of minority, small and women-owned businesses in the telecommunications industry. This on-line resource is free of charge and gives business owners and entrepreneurs useful information to help develop solutions for capital development, domestic and international market expansion, diversification, and project management. The Internet address is <<http://www.ntia.doc.gov>>.

In addition, MTDP offers broadcast management training and consultation opportunities. Through the ComTrain program, MTDP places minority entrepreneurs in existing broadcast entities to hone their skills. This program serves as a resource to minority owners with limited or no broadcast management experience during the critical stages of station development.

TELECOMMUNICATIONS AND INFORMATION APPLICATIONS

The NII is an effort to use new telecommunications and information technologies to connect Americans to one another, to services, and to information. While the private sector is building the NII, Federal Government actions are necessary as a catalyst to facilitate and encourage private development of the NII. NTIA continues to demonstrate leadership in the development of the NII through its management of the Telecommunications and Information Infrastructure Assistance Program (TIIAP), participation in the Telecommunications Policy Committee of the Information Infrastructure Task Force, and support of the U.S. Advisory Council on the NII. NetDay and the Public Telecommunications Facilities Program complete the agency's applications programs.

Telecommunications and Information Infrastructure Assistance Program

TIIAP is a matching grants program that promotes the expansion and effective use of the NII by public and nonprofit entities at the community level. TIIAP provides matching grants to non-profit organizations (schools, libraries, community organizations, hospitals, police and fire departments, state and local governments) that develop innovative applications of new information and communications technologies. In 1996, sixty-seven public institutions, competitively selected from over 800 applicants, were awarded \$18.6 million in federal matching grants. Projects were selected on the basis of their ability to serve as models that can be replicated across the country. Appendix III contains a listing of FY 1996 TIIAP grantees.

Over the past three years, the program has awarded \$80 million to 277 projects, which was matched by more than \$130 million in non-Federal funds to invest in the development of the National Information Infrastructure. Connection of these public institutions to the NII by the year 2000 is one of this Administration's priorities. Four of the ten organizations that received 1996 National Information Infrastructure (NII) Awards for extraordinary achievement on the Internet got seed funding from TIIAP. The program recently announced its fourth grant competition, with applications due March 27, 1997.

In 1996, NTIA also released the "Lessons Learned from TIIAP" report, which presents the initial experiences of the projects funded in 1994 and 1995. The report offers a snapshot look at the community impacts of TIIAP projects, and presents examples of how specific projects are using advanced telecommunications and information technologies to provide better services, to strengthen community ties, and to provide increased access to information for thousands of Americans.

Information Infrastructure Task Force

NTIA continued to support the Administration's Information Infrastructure Task Force, or IITF. Assistant Secretary Irving chairs the Telecommunications Policy Committee which was instrumental in formulating the Administration's position for the Telecommunications Act of 1996. Assistant Secretary Irving also chairs the Universal Service Working Group. In a restructuring of the IITF, the Reliability and Vulnerability Working Group (RVWG) moved to the Information Policy Committee. The International Telecommunications Policy Working Group, a subset of the Telecommunications Policy Committee, helped to support Administration policies and programs in the international arena.

U.S. Advisory Council on the NII

NTIA provided secretariat functions for the National Information Infrastructure Advisory Council (NIIAC), which held its concluding events in Washington, D.C. on February 13. The NIIAC released two final reports, "Kickstart Initiative," and "Nation of Opportunity."

NetDay96 Initiative

In his 1996 State of the Union address, President Clinton underscored the importance of using technology to achieve our nation's educational goals and set forth a vision to connect all classrooms to the Information Superhighway by the year 2000. In March 1996, President Clinton and Vice President Gore kicked-off NetDay96 -- a nationwide voluntary effort to bring together industry, students, teachers, parents and committed citizens to wire classrooms throughout the country. In California alone, more than 20,000 volunteers and more than 200 businesses joined together to install 6 million feet of wire to connect classrooms in 2,600 schools. By the end of the year, over 40 states had organized a NetDay96 effort.

NTIA strongly supported the NetDay96 initiative by working to ensure that schools serving rural and inner-city underserved communities were not left behind in this important effort. NTIA staff volunteered their personal time to help pull wires in schools in the Washington, D.C. area. NetDay activities will continue in 1997.

Public Telecommunications Facilities Grants Program

NTIA's Public Telecommunications Facilities Program (PTFP) issued grants totaling approximately \$13.4 million to 96 recipient organizations in 42 states, American Samoa, the District of Columbia, and Puerto Rico. The grants enable public broadcasting organizations, as well as many nonbroadcast operations, to buy equipment to activate new services, extend the range of present services, and improve existing facilities.

For 1996, PTFP awarded 38 public radio grants, 47 public television grants, and 11 distance learning grants. The awards will extend a public radio signal to approximately 2.8 million presently unserved persons and a public television signal to approximately 700,000 unserved persons. Appendix IV contains a listing of FY 1996 PTFP grantees.

FEDERAL SPECTRUM MANAGEMENT

NTIA coordinates Federal government policies regarding spectrum use, planning, emergency operations and international coordination of government satellite systems; manages the Federal radio spectrum necessary for national defense, public safety, air traffic control, national resource management and other critical government functions; and prepares and coordinates Federal government proposals for ITU World Radio Conferences and related technical meetings. Major issues include spectrum management reform, negotiations regarding the integration and interference protection for satellite systems (GPS and GLONASS) that will support the evolving Global Navigation Satellite system for air traffic control, and addressing the public safety spectrum requirements through the year 2010 through the joint FCC/NTIA Public Safety Wireless Advisory Committee.

Spectrum Policy and Planning

During 1996, NTIA continued its two programs to promote more efficient use of the radio spectrum. The first, the Spectrum Openness Program, provides industry the opportunity to (1) present its views on Federal radiocommunication issues, (2) receive advice on spectrum allocation matters and requirements, and (3) obtain information on Federal use of the spectrum directly from NTIA personnel and the Interdepartment Radio Advisory Committee (IRAC). The second, the Strategic Spectrum Planning Program, encompasses a long-range spectrum planning process designed to identify and address all U.S. spectrum needs more effectively. NTIA has also begun an automated Federal spectrum management system to provide a standardized computer-automated method for the Federal agencies to submit applications for spectrum support, select spectrum technically that is interference free, and validate that the spectrum requested is within the rules and regulations governing spectrum authorization.

It is becoming critical to view spectrum issues in a unified context for both Federal and non-Federal use. Spectrum management includes a long-range spectrum planning process designed to identify and address all U.S. spectrum needs more effectively. Under this program, a Notice Of Inquiry was issued to ascertain Federal and non-Federal user spectrum requirements for the future. A report, High Frequency (3-30 MHz) Spectrum Planning Options, was approved for publication in December 1996. This report addressed the spectrum requirements for the radio services requiring use of the high frequency (HF) radio spectrum from 3 to 30 MHz. Many nations use HF for communications with vessels, aircraft, for amateur operations, and for international broadcasting. Developing countries still use HF for domestic, internal communications where the telephone infrastructure is not mature. An additional 3,088 kHz of HF spectrum access is needed to satisfy current and future requirements for the aeronautical, maritime, broadcasting, and amateur services. This report identifies HF bands where increased sharing can be accomplished, and where the bands may be reallocated from the fixed service to one or more of the mobile, amateur, or broadcasting services.

International Spectrum Policy & Planning

NTIA played a key role in the preparation of U.S. proposals for the **World Radio Conference 1997 (WRC-97)**. NTIA, through the Radio Conference Subcommittee of the Interdepartment Radio Advisory Committee (IRAC), approved twenty-six draft proposals that were sent to the Federal Communications Commission for coordination and approval. NTIA and the FCC have established a joint process for the development of draft U.S. proposals for world radiocommunications conferences. NTIA coordinated proposals from Federal government agencies and the FCC prepared nongovernment proposals via its WRC-97 Advisory Committee. To make U.S. proposals available to other administrations as early as possible, NTIA and FCC jointly released drafts for public review as they were developed. Based on international feedback, these proposals may be modified prior to submission to the International Telecommunication Union (ITU). Nine proposals have been completed during 1996, and eleven more draft proposals are awaiting joint release to the public for comment.

Beginning in 1993, NTIA worked closely with a U.S. task group formed to respond to the ITUs Study Group I requirement for a new recommendation limiting the spurious emissions from all transmitters, both radar and radiocommunication. Working with a group of government and manufacturer representatives, the task group prepared U.S. proposals for four international meetings and led the work to agree on a final Recommendation in November 1996. The U.S. position took care to arrive at a balanced set of spurious emission limitations that would not only foster interference-free communications but also would not require overly protective and costly additions to engineering and manufacturing for existing systems. The Recommendation was adopted by the ITU Study Group I and will be presented to the WRC 97.

During 1996, NTIA contributed substantially to the products of several ITU Study Groups. These products include:

- handbooks on spectrum management and monitoring;
- guidelines on the development of a Basic Automated Spectrum Management System, which have been provided to developing countries;
- spectrum sharing analyses for the Fixed Satellite Service and "Big LEO" mobile satellites; and,
- world-wide recommendations on cellular and PCS systems that recognize U.S. standards.

These products and NTIA's work with the ITU overall play a key role in maintaining and expanding access to the global market for U.S. products and services.

Federal Spectrum Assignments

To fulfill the Federal government's needs for radio spectrum, NTIA processes frequency assignment requests -- including requests for new frequency assignments, changes to existing assignments and deletions of assignments -- which are received from Federal agencies. In addition, NTIA certifies major radiocommunication systems. These systems enable the Federal government to continue provision of essential services to the public such as air traffic control, law enforcement, national defense, and resources management. NTIA maintains the Government Master File (GMF) -- 402,000 frequency assignments by the end of 1996 as compared to 393,605 by the end of 1995. There were approximately 88,284 Federal agency requests for assignment actions in 1996 as compared with 99,629 in 1995. NTIA certified 91 new radiocommunication systems valued at approximately \$2.4 billion in 1996. NTIA reviewed and coordinated 72 foreign satellite systems and submitted documents on 35 U.S. satellite systems to the International Telecommunication Union. These actions provided protection for U.S. satellite systems from interference from other countries.

The Interdepartment Radio Advisory Committee (IRAC), chaired by NTIA, is made up of representatives from 20 Federal agencies which are major spectrum users. The IRAC is an integral part of the Federal government's spectrum management process. It provides (1) advice to NTIA on spectrum management; (2) resolution of various spectrum issues and problems among Federal agencies, among the Federal government and non-government sector through the FCC, and among the Federal government and foreign countries and international fora such as the International Telecommunication Union; and (3) recommendations to NTIA relative to national and international spectrum issues, Federal spectrum policy and Federal rules and regulations. The IRAC is chaired and administered by NTIA. The IRAC and its subcommittees and ad hoc groups have conducted approximately 124 meetings and addressed over 3,400 documents in 1996. These documents covered various Federal, non-Federal, and international spectrum management, policy, and planning issues and problems.

Spectrum Management Training

In cooperation with the United States Telecommunications Training Institute (USTTI), a joint venture that provides free training to professionals from developing nations, NTIA conducts workshops for telecommunications managers and specialists from foreign countries. The workshops cover basic spectrum management and computer-aided techniques, development of commercial enterprises, and advanced spectrum management. The workshops reinforce U.S. ties with foreign countries -- especially those moving toward privatization and liberalization of their telecommunications markets -- and provide a forum to discuss national and international regulatory and spectrum planning issues. The course this year involved 23 participants from 17 developing countries including, for the first time, Cambodia, the Palestinian Authority, and Mongolia. NTIA has participated in USTTI's training outreach since 1983 and has trained more than 300 individuals during that time. Many of the individuals who receive training through these programs will go on to hold leadership positions within their countries or within the International Telecommunication Union.

NTIA Radio Spectrum Wall Chart

NTIA completed a comprehensive review of spectrum allocations and released a new version of its popular spectrum wall chart depicting in graphical form and in thirty-three colors the radio frequency spectrum allocations in over 450 frequency bands from 9 kHz to 300 GHz. More than 10,000 copies have been distributed. The new chart is available from the U.S. Government Printing Office and on the World Wide Web at <http://www.ntia.doc.gov/osmhome/allochrt.html>:

Summer Olympics Spectrum Support

NTIA provided daily frequency assignment support during the Summer Olympic Games in Atlanta, GA. Primary use of the frequency assignments were for security, transportation, and emergency preparedness. About 40,000 Olympic personnel and athletes participated, along with approximately 2,500 Federal law enforcement agents and 8,500 military personnel to help provide security.

Public Safety Wireless Advisory Committee (PSWAC) Report

The PSWAC, which advises NTIA and the FCC, released a report addressing public safety and spectrum support issues through the year 2010. The report also focused on approaches to be taken as interim steps to relieve present deficiencies. NTIA and the FCC will jointly address the recommendations made by the PSWAC. A follow-on effort was proposed by Secretary Irving calling for the establishment of a National Public Safety Council which will continue the information flow and strengthen the relationship between the public safety entities at all levels and assist NTIA and the FCC in implementing the PSWAC recommendations. The report is available through the NTIA World-Wide Web site at <http://www.ntia.doc.gov>.

Spectrum Fees

For fiscal year 1997, Congress passed P.L. 104-208 which specifies that NTIA should not authorize spectrum use or provide services without payment from user agencies. The accompanying conference report directed NTIA to bill the agencies \$5 million (approximately 36% of spectrum management costs) in FY 1997. NTIA has received memorandums of understanding from the agencies and the vast majority of the funds requested have been provided.

INTERNATIONAL TELECOMMUNICATIONS POLICY

NTIA develops and recommends policy alternatives for Executive Branch positions on major international telecommunications and information issues. Specifically, NTIA develops and promotes U.S. policies to improve the international competitiveness of the U.S. telecommunications industry. NTIA has played a leading role in promoting and building international consensus for the core principles underlying the development of the Global Information Infrastructure (GII). The adoption of these key principles by the world community will help to increase competition and open markets for U.S. companies.

NTIA has played a lead role in promoting the GII principles in both international and bilateral fora. NTIA coordinated U.S. participation in the Information Society and Development Conference in South Africa in May and the Latin American Telecommunications Summit in Mexico in September. NTIA also played a key role in promoting U.S. interests at the Asia Pacific Economic Cooperation (APEC) Telecommunications and Information Ministerial meeting in October. NTIA has continued to be an active participant in the World Trade Organization (WTO) negotiations on basic telecommunications, which would open many of the key foreign telecommunications service markets to competition. In addition, NTIA played a central role in telecommunications talks focused on select foreign countries in Europe, Latin America, Asia, and Africa with significant market opportunities for U.S. providers of telecommunications goods and services.

Information Society and Development Ministerial Conference

NTIA led the U.S. preparations for the first ever Information Society and Development (ISAD) Conference which was held in Midrand, South Africa from May 13-15. The Ministerial Conference provided an unprecedented forum for 40 ministers from all regions of the world and senior representatives from many international organizations to work together on policy actions that will promote the integration of the developing world into the global information society. The U.S. government's primary objective for this Ministerial Conference was to promote and expand the consensus on the principles agreed to at last year's G-7 Ministerial on the Information Society held in Brussels. At the ISAD Ministerial, NTIA was successful in gaining acceptance for the Brussels principles. These include the five core policy principles first articulated by the Vice President in 1994 for the development of a Global Information Infrastructure (GII): encouraging private investment, promoting competition, providing open access, creating a flexible regulatory environment, and ensuring universal service. Acceptance of these principles represents significant progress in our effort to gain access to foreign markets, ensure fair trade, and establish solid foundations for growth in the telecommunications sector.

Latin America Telecommunications Summit

NTIA, in conjunction with the International Trade Administration (ITA) and the Telecommunications Industry Association (TIA), organized the third Latin American Telecommunications Summit (LATS) held in Mexico in September. NTIA led the official U.S. delegation to the Summit which included senior U.S. government officials from State Department and the FCC. Representatives from approximately thirty U.S. telecommunications equipment manufacturers and service providers participated in LATS. Telecommunications Ministers and senior government telecommunications officials from the largest markets in Latin America, including Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Uruguay, and Venezuela attended the Summit.

LATS provided the opportunity for the U.S. Government to encourage continued liberalization and privatization of the telecommunications sector in Latin America and to facilitate access of U.S. equipment manufacturers and service providers in the region. LATS also provided an opportunity for U.S. equipment manufacturers and service providers to promote their products in the Americas. According to industry participants, the 1993, 1995 and 1996 LATS resulted in or facilitated hundreds of millions of dollars in sales and contracts. The 1996 LATS was the most successful LATS to date.

Asia Pacific Economic Cooperation Meetings

NTIA played a key role in both the July 23-26 APEC Working Group on Telecommunications and the September 2-6 APEC Senior Officials and Ministerial Meetings on Telecommunications and

Information. The APEC group seeks to develop a collective action plan for telecommunications and information liberalization by the year 2010 for industrialized economies and 2020 for all APEC economies. The APEC Ministers previously agreed on a plan to integrate telecommunications and information industries of participating nations. The plan, which is called the Seoul Declaration for the Asia Pacific Information Infrastructure (APII), adopted the five core principles initially set forth by Vice President Gore.

World Trade Organization

NTIA continued its active participation in WTO negotiations on basic telecommunications, which are scheduled to conclude on February 15, 1997. Through these negotiations, the Administration is striving to eliminate market access and foreign ownership restrictions around the world and establish uniform competition rules for this sector. While a number of countries have made valuable market opening commitments, more and better offers from key negotiating partners are still required, especially in Asia. NTIA will continue to work with the interagency negotiating team to secure better offers and to resolve outstanding issues with regard to international and satellite services so the negotiations can be concluded successfully by the February deadline.

ITU World Policy Forum

NTIA participated in the International Telecommunication Union (ITU) World Forum in Geneva on policies that will be implemented for advanced satellite-delivered personal communications. These services will be available to every part of the world. The ITU Policy Forum adopted guidelines and principles for national treatment and early introduction of these systems covering topics of frequency allocation, interconnection to telephone networks, roaming, terminal equipment and tariffs. As a follow up to our work at the ITU Policy Forum, NTIA is drafting and assisting in the negotiation of a Memorandum of Understanding on Global Mobile Personal Communications by Satellite. Adoption of the Memorandum of Understanding will facilitate the free circulation of user terminals -- a service that is necessary for global and regional communications systems to be successful.

European Union Global Standards Conference

Under NTIA's leadership, the European Union Commission's proposal for the 1997 Global Standards Conference was successfully restructured to feature the role of industry, rather than governments, in developing and implementing global standards for the further development of the Global Information Infrastructure. NTIA led the delegation to preparatory meetings, and coordinated the U.S. Government position with other agencies and with industry. NTIA will continue its leadership role in preparing for U.S. participation in the months leading up to the October 1997 conference.

International Accounting Rate Reform

NTIA, with other Executive Branch agencies, the FCC, and industry continued to advocate pro-competitive accounting rate reform through participation in meetings of multilateral organizations and bilateral meetings with individual foreign governments. Further, NTIA is working with other U.S. agencies and industry regarding a pending regulatory proceeding before the FCC to revise existing benchmark settlement rates.

Reform of INTELSAT and Inmarsat

NTIA continued its advocacy for reform and restructuring within the INTELSAT and Inmarsat global satellite organizations in order to increase competition and lower user prices in the international telecommunications sector. The goal is to permit these organizations to seek new commercial opportunities on a fair, non-discriminatory, and pro-competitive basis while continuing to provide their core services.

NTIA designed and assisted in negotiating a structural separation system enabling Inmarsat (and its U.S. signatory, Comsat) to establish an independent, commercial subsidiary (ICO), which will compete with such enterprises as Iridium, Odyssey, and Globalstar for the global, mobile handheld, telephony market. NTIA also has strongly advocated a pro-competitive outcome in negotiating INTELSAT's restructuring. A number of U.S. firms (AT&T, Motorola, Lockheed-Martin and GE Americom, among others) announced plans this year to launch geostationary system which would provide greater competition to INTELSAT.

TELECOMMUNICATIONS RESEARCH

NTIA's research laboratory, the Institute for Telecommunication Sciences (ITS) in Boulder, Colorado, performs state-of-the-art telecommunications research to support NTIA and Department of Commerce goals as well as specific research under reimbursable agreements with other Federal agencies and under cooperative research agreements with private sector partners. ITS is an active contributor to many agency endeavors, including quality of service issues, advanced television standards, Internet issues and roles, etc.

ITS provided key technical contributions in 1996 to spectrum management and policy issues and conducted research in support of U.S. industry and government on advanced network performance standards (including Broadband Integrated Services Digital Networks or B-ISDN), personal communications services, broadband radio propagation analysis, Intelligent Transportation Systems, the Global Positioning System, and audio and video quality assessment. This work supports the Administration's goals of fostering the evolution of the National Information Infrastructure (NII) and the Global Information Infrastructure (GII).

ITS continued to provide a leading role in domestic and international telecommunications conferences to promote telecommunications standards and spectrum measurement development. During 1996, ITS led the U.S. Delegation to the International Telecommunication Union-Telecommunications Standardization Sector (ITU-T) Study Group 13 (General Network Aspects) in Geneva. U. S. contributions approved at this meeting included work on B-ISDN performance (e.g. Asynchronous Transfer Mode (ATM) cell transfer performance and frame relay functions), internetworking among networks, and communications traffic and congestion control. ITS also made major contributions to American National Standards Institute (ANSI) accredited Standards Committee T-1 Telecommunications on advanced audio and video quality-of-service performance assessment. ITS led Federal efforts to produce a new *Glossary of Telecommunications Terms* (Fed Std 1037C) and ITS staff developed a hypertext version of the 5,800 entry glossary. It is available at <<http://www.its.blrdoc.gov/fs-1037>>.

Industry Outreach

ITS also pursued cooperative research with private sector companies under the Federal Technology Transfer Act of 1986, as amended, to promote U.S. competitiveness and market opportunities for advanced telecommunications products and services. During 1996, ITS worked with companies such as

U S West Advanced Technologies, Inc., the American Automobile Manufacturers Association, AudioLogic, Inc., Integrator Corporation, and Industrial Technologies, Inc., to undertake measurements and testing of new wireless communications, such as personal communications services and local multipoint distribution services, and advanced audio and video quality-of-service performance assessment.

NTIA GOLD AND SILVER MEDAL WINNERS

The ISAD Team was recognized with the Department's Gold Medal for significant contributions in preparing for and in implementing U.S. objectives for the Information Society and Development Ministerial Conference in South Africa, May 13-15, 1996. Team members include Elizabeth Echols, Suzanne Settle, Gregory Francis, David Gardner, Diane Steinour, Paige Darden, Roanne Robinson, Tatia Williams, and Cathleen Wasilewski. Mr. William Gamble was awarded the Gold Medal for his outstanding leadership in the development of National spectrum policies to bring forth a consensus on diverse spectrum issues while supporting the critical and essential missions of Federal Agencies.

The Department's Silver Medal was awarded to Mr. Jeffrey Wepman who was recognized for his outstanding contributions to Personal Communication Services (PCS) and knowledge of the radio spectrum and wireless communications. The Silver Medal was awarded also to Mr. Edward Davison in recognition of his leadership in the coordination of national and international satellite communication systems for the U.S. Government.

NTIA ON THE WORLD-WIDE WEB

To expand electronic access to public information, NTIA established one of the first Federal government World-Wide Web (WWW) servers (<http://www.ntia.doc.gov>). All of NTIA's publicly available documents are posted on this web site. The following general principles guide NTIA's managers on electronic information dissemination; these principles apply to all NTIA electronic information dissemination efforts, regardless of specific form.

NTIA On-Line Information will be:

1. Designed for the external user; i.e., constituent ease of use, interactivity, and usefulness of the information will be the overriding priority.
2. Accurate, Timely, Complete, and Relevant.
3. Information should be available on-line no later than when it is available in hard copy and preferably before the hard copy is available.
4. Limited to organizational and programmatic information.

NTIA's efforts to develop this site were recognized with Vice President Gore's Hammer Award.

COMMENTS

NTIA welcomes comments on its activities and programs. To offer suggestions or obtain further information, please contact Sarah Maloney or Charles Franz at 202-482-1835 or send e-mail to <smaloney@ntia.doc.gov> or <cf Franz@ntia.doc.gov>.

Copies of documents cited in this report are for sale by the National Technical Information Service, Springfield, VA (703) 487-4650.



NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
ANNUAL REPORT
FY 1995

Mission

The National Telecommunications and Information Administration (NTIA): (a) serves through the Secretary of Commerce as the principal adviser to the President on domestic and international communications and information policy-making; (b) develops pro-competitive policies for presentation before the Congress and the Federal Communications Commission (FCC) and in bilateral and multilateral international fora; (c) manages all Federal use of the electromagnetic spectrum and generally promotes efficient use of spectrum; (d) in partnership with business and other federal agencies, conducts telecommunications technology research, including standards-setting; and (e) awards grants through the Public Telecommunications Facilities Program (PTFP), the National Endowment for Children's Educational Television, and the National Information Infrastructure initiative.

National Information Infrastructure

NTIA provided policy and administrative support for the Administration's National Information Infrastructure initiative NII, and acted as the Secretariat for the Information Infrastructure Task Force (IITF) and the NII Advisory Council (NIIAC). NTIA chairs the Telecommunications Policy Committee of the which includes three working groups: Universal Service, International Telecommunications Policy, and Telecommunications Legislation.

To expand electronic access to public information, NTIA established an electronic bulletin board system (bbs at 202-501-1920) and gopher/World-Wide Web (WWW) server (ntiabbs.ntia.doc.gov). Similarly, NTIA established and operates for the IITF a bbs (202-501-1920) and a ftp/telnet/gopher/WWW server at iitf.doc.gov.

NTIA also began a new program to fund NII networking pilot and demonstration projects, the Telecommunications and Information Infrastructure Assistance Program (TOP). NTIA awarded over 90 grants in 45 states with \$24 million in government funding. The grants require matching funds and will generate a total of \$67.6 million toward the development of the National Information Infrastructure in public institutions such as schools, hospitals, libraries, social service organizations, museums, and state and local governments.

Legislative Activities

NTIA played a substantial role in Congressional adoption of the provisions of the Omnibus Budget Reconciliation Act that sought to improve spectrum management by authorizing the FCC to use competitive bidding to assign spectrum licenses.

Increased Competition and Technological Innovation

NTIA successfully advocated domestic policies to increase competition and technological innovation. NTIA filed comments with the Federal Communications Commission (FCC) seeking to promote efficient deployment of new wireless forms of communications known as Personal Communications Services (PCS) and to implement competitive bidding for PCS licenses.

International Telecommunications Policy

NTIA initiated a comprehensive study of the regulation of international telecommunications services with a public Notice of Inquiry (NOI), seeking comment on the marketplace, technological, and regulatory factors affecting the provision of international telecommunications services, as well as the appropriate U.S. regulatory approach in light of those conditions. Information gathered through the NOI will assist NTIA in the development of a coherent policy framework for addressing international regulatory issues. NTIA also established an interagency group, including the White House and other interested Executive Branch agencies, to formulate an Administration position on the market access issues.

Spectrum Management

To fulfill the Federal Government's needs for radio spectrum, NTIA's Office of Spectrum Management maintains the Government Master File of approximately 290,000 authorized frequency assignments. Approximately 115,000 frequency assignment requests -- including requests for new frequency assignments, changes to existing assignments and deletions of assignments -- were received from Federal agencies and processed by NTIA. In addition, NTIA certifies new major radiocommunication systems. These systems will enable the Federal government to continue provision of essential services to the public such as air traffic control, law enforcement, national defense, and resources management.

Spectrum Policy

NTIA continued its two programs to promote more efficient use of the radio spectrum. The first, the Spectrum Openness Program, provides industry the opportunity to (1) present its views on Federal radiocommunication issues, (2) receive advice on spectrum allocation matters and requirements, and (3) obtain information on Federal use of the spectrum directly from NTIA personnel and the Interdepartment Radio Advisory Committee (IRAC) or through an electronic bulletin board system. The second, the Strategic Spectrum Planning Program, encompasses a long-range spectrum planning process designed to identify and address all U.S. spectrum needs more effectively. NTIA has also begun a program to develop an automated Federal spectrum management system to provide a standardized computer automated method for the Federal agencies to submit applications for spectrum support, technically select spectrum that is interference free, and validate that the spectrum requested is within the rules and regulations governing spectrum authorization.

Spectrum Management Training

In cooperation with the United States Telecommunications Training Institute (USTTI), a joint venture that provides free training to professionals from developing nations, NTIA conducted workshops for telecommunications managers and specialists from foreign countries. The workshops covered basic spectrum management and computer-aided techniques, development of commercial enterprises, and advanced spectrum management. The workshops reinforced U.S. ties with foreign countries -- especially those moving toward privatization and liberalization of their telecommunications markets -- and provided a forum to discuss national and international regulatory and spectrum planning issues. NTIA has participated in USTTI's training outreach since 1983 and has trained almost 300 individuals during that time.

NTIA'S Institute for Telecommunication Sciences (ITS)

ITS, the primary Federal telecommunications research laboratory, conducted research on advanced network user performance standards (including Integrated Services Digital Networks -- ISDN), Personal Communications Services (PCS), broadband radio propagation analysis, Intelligent Vehicle Highway

Systems (IVHS), and automated video and sound quality assessment.

ITS led the U.S. Delegations to the International Telecommunication Union - Telecommunications Standardization Sector (ITU-T) Study Group XIII (Digital Networks) in Geneva. U.S. recommendations approved at these meetings included contributions on Broadband ISDN, Intelligent Networks, and preliminary activities on Universal Personal Telecommunications.

Industry Outreach

ITS pursued cooperative research with private companies under the Federal Technology Transfer Act of 1986 to continue its efforts aimed at assisting U.S. industry in emerging telecommunications technology areas.

Public Telecommunications Facilities Grants Program

NTIA's Public Telecommunications Facilities Program (PTFP) issued grants totalling \$21.2 million to 140 recipients in 42 states, American Samoa, the Northern Marianas and the District of Columbia. The grants will enable public broadcasting organizations, as well as many nonbroadcast operations, to buy equipment to activate new services, extend the range of present services, and improve existing facilities.

FY 1994 PTFP awards will bring a first public radio signal to over 1.5 million listeners and a first public television signal to approximately 1.4 million viewers. Other funded projects will support the maintenance and improvement of the public broadcasting infrastructure and the extension of distance learning services.

The PTFP also continued its assistance to two major distance learning planning studies through cooperative agreements. The two recipients are the American Indian Higher Education Consortium (AIHEC) and the Council of Chief State School Officers (CCSSO). The AIHEC project is now in its third year of planning. The first two years of the AIHEC effort resulted in recommendations on interconnecting the member-schools to each other and to the numerous sources of distance learning programming now available via satellite-delivery systems. The study with CCSSO has involved the input of federal policy and regulatory agencies, educators, telecommunication programming providers, and telecommunications service delivery providers to determine how best to coordinate the use of telecommunications facilities for the cost-efficient delivery of distant learning programming nationwide. Both studies will continue with activities into FY 1995.

Pan-Pacific Educational and Communications Experiments by Satellite Program (PEACESAT)

PEACESAT provides a satellite telecommunications network for exchanging social, environmental, health, and educational information among the countries of the Pacific Basin region. NTIA continued to support PEACESAT activities for the University of Hawaii, which operates the network, including the improvement of computer communications infrastructure to increase PEACESAT's data programming capability. Additional low-cost user earth terminals were also installed in several Pacific Island nations with non-Federal funds.

NTIA also conducted a comprehensive study of satellite alternatives for PEACESAT use and held a conference on satellite alternatives with the University of Hawaii and PEACESAT users. The resulting report to Congress recommended an extension of the current agreement for use of NOAA's GOES-3 satellite in order for PEACESAT to define its long-term service and traffic service requirements and provide more time to search for long-term satellite configurations.

National Endowment for Children's Educational Television (NECET)

The ten-member Advisory Council on Children's Educational Television held its second meeting in January to provide advice on funding criteria and the administration of the program. Subsequent to the meeting, NTIA conducted its first grant round and issued awards to twelve organizations in eight states. The matching grants totalling \$2.4 million in NECET funds will support projects that enhance the

education of our nation's children through the creation and production of television programming designed to foster fundamental intellectual skills.

Funded projects involve the production of series, individual, and pilot programs, as well as various pre-production activities. For the first two years following production, NECET-funded programming is to be offered to public television stations. Thereafter, it will be made available to commercial television networks and stations as well as to cable television networks and systems.

Minority Telecommunications Development Program (MTDP)

NTIA's Minority Telecommunications Development Program (MTDP) continued its efforts to encourage and increase minority ownership of telecommunications businesses. In addition to compiling annual statistics and a list of minority-owned radio and television stations in the U.S., NTIA administered a communications management training program for new minority broadcast owners (COMTRAIN), participated in several national and regional conferences on business opportunities and financing in new telecommunications technologies, and supervised an ongoing contractor study on access to capital for minority participants in communications industries, known as TELECAP.



NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION



ANNUAL REPORT 1994

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The National Telecommunications and Information Administration (NTIA), a unit of the United States Department of Commerce, is headquartered in Washington, D.C., with a satellite office in Annapolis, Maryland and a telecommunications laboratory facility in Boulder, Colorado. (Organization Chart) In Fiscal Year 1994, NTIA had a permanent staff of approximately 250 and an appropriation of \$70,927,000. Appropriations for Fiscal Year 1995 total \$125,500,000.

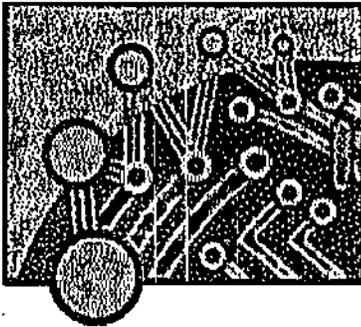
NTIA's principal duties include:

- Acting as principal policy adviser and providing administrative support for the President, Vice President, and Secretary of Commerce Ronald H. Brown on planning and implementation of the Administration's National Information Infrastructure (NII) initiative;
- Serving through the Secretary of Commerce as the principal adviser to the President on domestic and international communications and information policy-making;
- Developing pro-investment and pro-competitive policies for presentation before the Congress and the Federal Communications Commission (FCC) and in bilateral and multilateral international conferences;
- Managing all Federal use of the electromagnetic spectrum and promoting efficient use of

- spectrum;
- In partnership with business and other federal agencies, conducting telecommunications technology research, including standards development;
- Awarding grants through the Telecommunications and Information Infrastructure Assistance Program, the Public Telecommunications Facilities Program, and the National Endowment for Children's Educational Television; and
- In partnership with the University of Hawaii, providing satellite services for the Pan-Pacific Educational and Communications Experiments by Satellite (PEACESAT) Program.

NTIA administers a number of specific programs related to these duties, including:

NATIONAL INFORMATION INFRASTRUCTURE INITIATIVE



NTIA has acted as a principal policy adviser and provided administrative support to the President, Vice President, and Secretary Brown on the planning and implementation of the Administration's National Information Infrastructure (NII) initiative. The White House established the intergovernmental Information Infrastructure Task Force (IITF), chaired by Secretary Brown, to articulate and implement the Administration's vision for the NII and to help build consensus within the Federal government on policy issues.

Assistant Secretary for Communications and Information Larry Irving chairs the Telecommunications Policy Committee of the IITF, which includes three working groups on Universal Service; International Telecommunications Policy; and Network Reliability and Vulnerability. Assistant Secretary Irving also chairs the Administration's Legislative Drafting Task Force, which is considering comprehensive telecommunications reform legislation.

As part of ongoing NII activities, NTIA and the Telecommunications Policy Committee began a number of outreach efforts to start an ongoing dialogue with private industry, academia, labor, public interest groups, and state and local governments. In its consideration of domestic and international issues, for example, the Telecommunications Policy Committee has hosted presentations by the broadcasting, cable, computer, and wireless industries as well as labor and minority representatives. Other outreach efforts include:

- Shortly after publication of the Administration's National Information Infrastructure: Agenda for Action, telecommunications experts were invited to provide their views on information infrastructure development and how the Administration can best achieve its goals. Fifteen of these essays were published in *20/20 Vision, The Development of a National Information Infrastructure*. These essays were the subject of a public conference in March co-sponsored by NTIA, the Telecommunications Policy Committee, and The Annenberg Washington Program that was attended by more than 120 people.



- *45k* NTIA also played a critical role in organizing a Public Interest Conference entitled "Shaping the NII: Public Interest Summit," held in March in Washington, D.C. Co-sponsored by the IITF and several private foundations, the conference provided a forum for various segments of the public interest community to address the broader social, economic, and

political issues related to the NII. More than 600 people attended the event, which was also broadcast on C-SPAN and in 30 radio markets.

- NTIA held five public hearings around the country on universal service and open access, at which more than 1,100 persons attended and 230 witnesses testified. A summary of these hearings was published as a report, *The NII Field Hearings on Universal Service and Open Access: America Speaks Out* (September 1994).
- At four of the universal service hearings, over forty organizations presented technology demonstrations of NII applications and services.
- NTIA held the first "virtual conference" sponsored by the Federal government, which was conducted solely over telecommunications networks in November 1994. Five conference topics hosted by recognized experts were accessed over 9,000 times via the Internet, listservs, news forums, and 78 Public Access Points located in libraries and other public institutions across the country. Other government agencies have decided to emulate NTIA's approach in reaching out to citizens.
- NTIA coordinated the planning for a Federal-State-Local Telecom Summit co-hosted by the IITF and the Annenberg Washington Program in Washington, D.C. Vice President Gore, Representative Edward Markey, Commerce Secretary Brown, and Governor of West Virginia Gaston Caperton were among the featured speakers. Assistant Secretary of Commerce Larry Irving, FCC Chairman Reed Hundt, and Assistant Attorney General Anne Bingaman also participated on a panel with state and local government officials. The Summit, held on January 9, 1995, addressed issues concerning the future of advanced telecommunications and the role of each level of government.
- The Telecommunications Policy Committee's International Telecommunications Working Group held a public hearing entitled "The Emerging Global Information Infrastructure" on July 27 and 28. Approximately 350 people attended and 29 witnesses testified on the components of the Global Information Infrastructure (GII), the status of the world's information infrastructure, and how best to develop a GI.
- The International Telecommunications Working Group also coordinated the drafting of the Global Information Infrastructure Agenda for Cooperation, which will be released early in 1995. The Agenda addresses policy issues related to information content and the benefits of new technologies and applications that will be possible over the GI. It will serve as the Administration's platform to engage other governments in a constructive process to ensure the development of the GI to the mutual benefit of all countries.

NTIA coordinated the preparation of a report on these and other IITF NII-related activities entitled *National Information Infrastructure Progress Report, September 1993-1994*.

NTIA also provides secretariat functions for the IITF and for the NII Advisory Council, a group of 37 private and public sector representatives appointed by Secretary Brown to advise the Administration on NII-related issues and efforts. The IITF secretariat publishes monthly reports on IITF activities and NTIA drafts public minutes of NII Advisory Council meetings. To expand electronic access to public information, NTIA established an electronic bulletin board system (bbs at 202-482-1199) and a gopher/World-Wide Web (WWW) server (ntiabbs.ntia.doc.gov). Similarly, NTIA established and operates a BBS (202-501-1920) for the IITF and an IITF ftp/telnet/gopher/WWW server at iitf.doc.gov.

The NII Advisory Council -- co-chaired by Delano E. Lewis, President and Chief Executive Officer of National Public Radio, and Edward R. McCracken, Chairman and Chief Executive Officer of Silicon Graphics, Inc. -- met seven times in 1994. The Advisory Council has established three Mega-Projects on Vision and Applications, Universal Access, and Privacy, Security and Intellectual Property. The Mega-Projects have drafted principles for public comments in each of these areas and, based on those principles, the Council will prepare consensus advice and recommendations for the Secretary of Commerce. NTIA provides extensive staff support for the activities of the Advisory Council.

DOMESTIC POLICY INITIATIVES

LEGISLATIVE ACTIVITIES

Assistant Secretary Irving chaired an interagency Legislative Drafting Task Force that met regularly to develop telecommunications legislative reform initiatives to support the NII. The Administration had several overarching goals for this effort:

- Encouraging private investment;
- Promoting and protecting competition;
- Providing open access to the network;
- Avoiding creation of a society of information "haves" and "have nots"; and
- Encouraging flexibility.

NTIA staff provided policy analysis and logistical support for this activity. While comprehensive telecommunications legislation did not pass the 103rd Congress, activity has resumed on this front in the 104th Congress.

INCREASED COMPETITION AND TECHNOLOGICAL INNOVATION

NTIA successfully advocated domestic policies to increase competition and technological innovation. For example, NTIA filed comments with the Federal Communications Commission (FCC) seeking to promote efficient deployment of new wireless forms of communications known as Personal Communications Services (PCS) and to implement competitive bidding for PCS licenses. In auctions conducted in 1994, the FCC received bids totalling approximately \$3 billion. In addition, NTIA urged the FCC to ensure that its auction rules create opportunities for designated entities, such as women and minorities, who historically have not had a full and fair chance to participate in telecommunications markets. The FCC subsequently adopted such rules.

UNIVERSAL SERVICE

NTIA issued a Notice of Inquiry (NOI) on universal service and open access issues in September 1994. To date, more than 97 parties have filed comments in response to the NOI. These comments will be used in the further development of Administration policies on universal service and open access. As noted above, NTIA also has held five public hearings around the country and an electronic virtual conference, which attracted participants from around the world, on these issues.

MINORITY TELECOMMUNICATIONS DEVELOPMENT PROGRAM

NTIA's Minority Telecommunications Development Program (MTDP) continued its efforts to encourage and increase minority ownership of telecommunications businesses. In addition to compiling annual statistics and a list of minority-owned radio and television stations in the United States, NTIA administered a communications management training program for new minority broadcast owners (COMTRAIN), participated in several national and regional conferences on business opportunities and financing in new telecommunications technologies, and supervised an ongoing contractor study on access to capital for minority participants in communications industries, known as TELECAP.

INTERNATIONAL TELECOMMUNICATIONS POLICY



83k INTERAGENCY POLICY GROUP

NTIA established and continues to chair an interagency group to formulate an Administration policy to address U.S. companies' access to foreign telecommunications markets.



246k G-7 CONFERENCE ON THE INFORMATION SOCIETY

NTIA convened a public meeting in November to discuss U.S. government goals and technology demonstration for the G-7 ministerial level conference on the Information Society scheduled for February 25-26, 1995, in Brussels. The Information Society Conference will include ministerial level discussions on: (1) regulatory and competitive frameworks, (2) the development of the infrastructure and access to it; and, (3) essential applications as well as the social, societal, and cultural aspects of the information society.

INTERNATIONAL SATELLITE ORGANIZATIONS

NTIA provided policy guidance related to the potential restructuring of the treaty-based international satellite organizations (ISOs) -- Intelsat and Inmarsat. The Executive branch outlined its broad policy objectives for restructured ISOs during 1994 and, through a White House-chaired interagency committee, will address options for implementation of those objectives.

Similarly, NTIA provided legal and policy guidance for Executive branch considerations of Inmarsat's desire to expand its activities from mobile maritime and aeronautical to include a global, handheld telephone system -- Inmarsat "P." In this instance, NTIA formulated and advocated a regime of structural separation between the ISO and its proposed commercial affiliate.

This structural separation enables Inmarsat to enter new markets but creates a level playing field for other competitive global ventures.

ITU WORLD TELECOMMUNICATION DEVELOPMENT CONFERENCE

NTIA played an integral part in preparing for the International Telecommunication Union (ITU) World Telecommunication Development Conference held in March 1994 in Buenos Aires, Argentina. Vice President Gore introduced the U.S. vision for the Global Information Infrastructure (GII) initiative, encouraging the 132 countries and 31 organizations to foster private sector investment, promote competition, create flexible regulatory policies, ensure universal service, and provide open access to the network for all information providers and users.

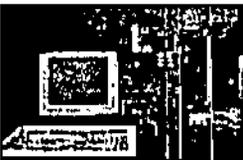
ITU'S PLENIPOTENTIARY CONFERENCE

NTIA served as a Vice Chairman at the International Telecommunication Union's (ITU) Plenipotentiary Conference in Kyoto, Japan in October 1994. The Plenipotentiary reviewed the treaty governing its functions and future direction of the organization.

JAPANESE BILATERALS

NTIA chaired bilateral discussions with Japan in a policy roundtable covering issues related to the GII and preliminary issues related to the G-7 meeting. The discussions were held in November in Washington, D.C.

NTIA GRANT PROGRAMS



TELECOMMUNICATIONS AND INFORMATION INFRASTRUCTURE ASSISTANCE PROGRAM

The Administration established a new program to promote the effective use of a modern, interactive National Information Infrastructure (NII) by the public and non-profit sectors at the state and local level. NTIA's Telecommunications and Information Infrastructure Assistance Program (TIIAP) provides matching grants to state and local governments, health care providers, school districts, libraries, universities, community organizations, public safety services, and other non-profit entities to help them access and use new telecommunications technologies. Grants are awarded after a competitive merit review process.

Improved access to information, made possible by an advanced NII, will increase productivity, create new jobs, help educate our children, and provide better medical care to all Americans, in addition to bringing the benefits of the Information Age to the traditionally unserved and underserved, including the poor, minorities, rural Americans, and disabled individuals.

TIIAP's 1994 award round received over 1,070 applications from 50 states, the District of Columbia and several territories; requests totalled more than \$560 million. The TIIAP grants awarded a total of \$24.4 million to 92 projects in 45 states, the District of Columbia and the U.S. Virgin Islands. Grantees were announced on October 12, 1994 by Secretary of Commerce Ronald H. Brown. NTIA will conduct the second round of the TIIAP program in 1995. The total FY 1995 appropriation for TIIAP and related activities is \$64 million.

FY 1994 TIIAP Awards by Category

Category	Number	Total
Community Information	27	\$7,377,504
Health	14	\$4,611,446
Government	15	\$3,316,947
Education (K-12)	14	\$2,764,198
Education (Higher)	7	\$2,384,951
Libraries	5	\$1,851,840
Social Services	2	\$ 878,493
Public Information	4	\$ 594,850
Arts & Culture	2	\$ 268,023
Science	1	\$ 200,000
Public Safety	1	\$ 114,676
Totals	92	\$24,362,928

PUBLIC TELECOMMUNICATIONS FACILITIES GRANTS PROGRAM

NTIA's Public Telecommunications Facilities Program (PTFP) issued grants totalling \$21.2 million to 140 recipients in 42 states, American Samoa, the Northern Marianas and the District of Columbia. The grants will enable public broadcasting organizations, as well as many nonbroadcast operations, to buy equipment to activate new services, extend the range of present services, and improve existing facilities.

FY 1994 PTFP awards will bring a first public radio signal to over 1.5 million listeners and a first public television signal to approximately 1.4 million viewers. Other funded projects will support the maintenance and improvement of the public broadcasting infrastructure and the extension of distance learning services.

The PTFP also continued its assistance to two major distance learning planning studies through cooperative agreements. The two recipients are the American Indian Higher Education Consortium (AIHEC) and the Council of Chief State School Officers (CCSSO). The AIHEC project is now in its third year of planning.

The first two years of the AIHEC effort resulted in recommendations on interconnecting the

member-schools to each other and to the numerous sources of distance learning programming now available via satellite-delivery systems. The study with CCSSO has involved the input of federal policy and regulatory agencies, educators, telecommunications programming providers, and telecommunications service delivery providers to determine how best to coordinate the use of telecommunications facilities for the cost-efficient delivery of distant learning programming nationwide. Both studies will continue with activities into FY 1995.

NATIONAL ENDOWMENT FOR CHILDREN'S EDUCATIONAL TELEVISION

The National Endowment for Children's Educational Television (NECET) conducted its second grant round and issued \$1 million in awards to ten organizations in five states. NECET was established by the Children's Television Act of 1990 to enhance the education of our nation's children through the creation and production of television programming specifically directed toward the development of fundamental intellectual skills. FY 1994 NECET funding will be used toward the production of series, individual programs and pilot programs, as well as for various pre-production activities.

NECET is administered by the Secretary of Commerce, who has delegated this responsibility to the Assistant Secretary for Communications and Information. A ten-member Advisory Council on Children's Educational Television provides advice on matters related to the administration of NECET.

For the first two years following production, NECET-funded programming may only be offered to public television stations. Thereafter, it can be made available to commercial television networks and stations and to cable television networks and systems as long as the programming is not interrupted by commercial advertising messages.

PAN-PACIFIC EDUCATIONAL AND COMMUNICATIONS EXPERIMENTS BY SATELLITE PROGRAM

The Pan-Pacific Educational and Communications Experiments by Satellite Program (PEACESAT) provides a satellite telecommunications network for exchanging social, environmental, health, and educational information among 21 countries within the Pacific Basin. NTIA continued to support PEACESAT activities at the University of Hawaii, which operates the network, including the improvement of digital communications infrastructure to increase PEACESAT's data programming capability. Additional low-cost user earth terminals continue to be installed in Pacific Island nations with non-Federal funds, the most recent being three terminals planned for the newly independent nation of Tokelau.

NTIA secured the use of the GOES-2 satellite from NOAA to ensure continuation of PEACESAT services after the GOES-3 satellite, used by PEACESAT since 1990, became unavailable because of limited station-keeping fuel. NTIA also supported the design and test of digital earth terminals which could bring increased voice, data and compressed video services to the islands of the Pacific. The Federal Emergency Management Agency (FEMA) and the Department of the Interior reached agreement to utilize PEACESAT as the backbone for an emergency management system in the U.S. Pacific, and PEACESAT terminals will be installed in six countries and territories during 1995.

SPECTRUM MANAGEMENT ACTIVITIES



150k SPECTRUM MANAGEMENT

To fulfill the Federal Government's spectrum management needs, NTIA's Office of Spectrum Management maintains the Government Master File of authorized frequency assignments. There are

approximately 320,000 assignments at present. NTIA processed about 135,000 frequency assignment requests in 1994. In addition, NTIA certified 86 major new radiocommunication systems valued at approximately \$5.2 billion. These systems will enable the Federal government to continue to provide essential services to the public such as air traffic control, law enforcement, national defense, and resources management.

NTIA's Interdepartment Radio Advisory Committee (IRAC) and its subcommittees and ad hoc groups have conducted approximately 125 meetings and addressed over 3,000 documents containing various Federal, non-Federal, and international spectrum management, policy, and planning issues and problems.

U.S. SPECTRUM REQUIREMENTS: PROJECTIONS and TRENDS REPORT

NTIA completed a report describing a 10-year projection of spectrum requirements needed to support evolving radiocommunications requirements in the United States based on private sector and government comments, other NTIA studies and available literature. Of the 18 radio services addressed, half had requirements that could be met within existing allocated spectrum; the other half (largely mobile services) could not. The report fulfills part of the direction received from Congress in the Omnibus Budget Reconciliation Act of 1993.

AUTOMATED FEDERAL SPECTRUM MANAGEMENT SYSTEM (AFSMS)

NTIA completed approximately 80% of the first phase of the design, test, and implementation of an AFSMS to replace the aging, time-consuming, and costly process now in use. NTIA's Office of Spectrum Management (OSM) in coordination with DOD's Joint Spectrum Center (JSC) has partially completed the research and development of the AFSMS desktop initial operating capability (IOC) to operate on a desktop personal computer. The initial prototype IOC implementation is planned to be fielded in FY 1995.

SPECTRUM REALLOCATION REPORT

The Preliminary Spectrum Reallocation Report was released on February 10, 1994. This report, prepared in response to Title VI of the Omnibus Budget Reconciliation Act of 1993, identified 200 MHz of radio spectrum for transfer from Federal Government use to private, commercial use. Comments were received from the FCC, Federal agencies and the public. A final report has been drafted and is being coordinated within the Federal government. It will be sent from the Secretary of Commerce to the President and Congress in February 1995.

RUSSIAN SATELLITE (GLONASS) INTERFERENCE

NTIA, working with the DOD, and Russian representatives have successfully completed the coordination process to alleviate interference from the Russian GLONASS Radionavigation satellite system to the U.S. Global Positioning System (GPS). This agreement will also greatly improve the compatibility between the GLONASS system and the proposed Big LEO Mobile Satellite Service, and Radioastronomy Service that operate in nearby frequency bands.

MOBILE SATELLITE SERVICE (MSS) SYSTEMS

NTIA, working with a number of affected government agencies, successfully completed coordination of the first Low Earth Orbit MSS system. The ORBCOMM system will share frequencies with government systems at 137 and 148 MHz. The FCC has now licensed ORBCOMM and the first satellites will be launched in early 1995.



116k SPECTRUM MANAGEMENT WORKSHOPS

The 12th year of U.S. Telecommunications Training Institute training produced a two-week course for 21 individuals from 16 developing nations. The nations represented included Russia, Moldova, Kazakhstan, Albania, Lithuania, and Romania from the former USSR; and developing nations from other regions of the world included Colombia, Turkey, and Macau. NTIA co-hosted the training with Motorola and Comsearch. NTIA has now trained over 300 senior staff from over 100 countries in spectrum management.

ASSISTANCE TO CHINA

NTIA developed a Task Plan to assist the Ministry of Posts and Telecommunications (MPT) of the People's Republic of China to establish a civil emergency telecommunications systems in the event of natural disasters and to continue spectrum management tasks to improve the efficient use of radio spectrum in China. These tasks would be conducted under a protocol signed by the Secretary of Commerce in 1988 and renewed in 1992 between NTIA and the MPT.

EMERGENCY READINESS PLAN

NTIA completed its Emergency Readiness Plan (ERP). This plan will be the basis for NTIA and the Federal government to exercise spectrum responsibilities during all types of emergency scenarios.

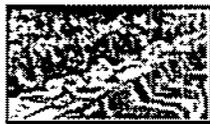
OPENNESS PROGRAM

The "Openness Program," initiated in June 1991, is designed to facilitate the timely and efficient exchange of information between Federal Government agencies and the public on a wide variety of subjects related to communications and information issues. The Openness Program staff receives about 150 requests for information per month. Since February 11, 1994, when a revised computer bulletin board became operational, about 6,800 people have used the bulletin board more than 16,100 times to obtain a wide variety of information. Plans have been developed for replacing the bulletin board with a set of more modern Internet servers (gopher, ftp, world-wide web) that will permit users more flexibility in obtaining information from NTIA.

INSTITUTE FOR TELECOMMUNICATION SCIENCES



158k The Institute for Telecommunication Sciences (ITS), the primary Federal telecommunications research laboratory, conducted research on advanced networking standards, including Integrated Services Digital Networks (ISDN), Personal Communication Services (PCS), broadband radio propagation modeling and analysis, and Intelligent Vehicle Highway Systems (IVHS), and on user performance standards for objective audio and video quality assessment.



85k INTERNATIONAL STANDARDS

ITS led the U.S. Delegation to the International Telecommunication Union--Telecommunications Standardization Sector (ITU-T) Study Group 13 meeting (General Network Aspects) in Geneva. U.S. recommendations approved at this meeting included contributions on Broadband ISDN, networking capabilities and interworking, and quality-of-service performance issues. Resolving these technical telecommunications standards issues will be highly relevant to the management and effective utilization of networks that will be employed in the National Information Infrastructure (NII) and Global Information Infrastructure (GII).

COOPERATIVE RESEARCH

ITS pursued cooperative research with private companies under the Federal Technology Transfer Act of 1986 to continue its efforts aimed at assisting U.S. industry in emerging telecommunications technologies. For example, ITS entered into Cooperative Research and Development Agreements (CRADAs) with U S WEST to: (1) complete measurements and analysis to characterize wideband propagation for PCS applications at six different cellular transmitting sites in the Bellevue, Washington area, and (2) make measurements to characterize wideband propagation in a newly developed U S WEST PCS outdoor testbed. This testbed has been established to test the application of PCS air interface standards. ITS also has entered into a CRADA with Motorola to assist with impulse response measurements and to provide data processing and analysis for existing radio sites in outdoor urban environments in Hong Kong to characterize radio frequency propagation for PCS usage. Finally, ITS worked with General Electric (GE) to study the emission characteristics of a newly- developed GE radio-frequency (RF) driven lighting device. Results of this work will facilitate GE's efforts in acquiring FCC approval for GE to manufacture and market this new lighting device in the U.S. and internationally.

TECHNOLOGY TRANSFER

Five ITS staff members were awarded the Federal Laboratory Consortium's 1994 Award of Merit for Excellence in Technology Transfer for the development, proof-of-concept evaluation, implementation, and publication of a family of HF radio Federal standards. (FED-STD-1045, HF Radio Automatic Link Establishment; pFED-STD-1046, HF Radio Automatic Networking; pFED-STD-1049, Section 1, HF Radio Linking Protection; and pFED-STD-1052, HF Radio Modems.)

COMMENTS

NTIA welcomes comments on its activities and programs. To offer suggestions or obtain further information, please contact Sarah Maloney or Charles Franz at 202-482-1835 or send email to smaloney@ntia.doc.gov or cf Franz@ntia.doc.gov or nii@ntia.doc.gov.

Copies of documents cited in this report are for sale by the National Technical Information Service, Springfield, VA (703) 487-4650.



Americans in the Information Age Falling Through the Net

10-16-2000

Statement by President Clinton

Press Release

Related Department of Commerce Reports

America's New Deficit
-- The Digital Work
Force: Building
Infotech Skills at the
Speed of Innovation
(PDF file)

U.S. Government
Electronic Commerce
Policy

Digital Divide Summit

On December 9, 1999, the Secretary of Commerce held a Digital Divide Summit, and announced a new web site, digitaldivide.gov.

October 2000:

The fourth in the *Falling Through the Net* series has been released as an [HTML file](#) and as a [pdf file](#). *Falling Through the Net, Toward Digital Inclusion* measures the extent of digital inclusion by looking at households and individuals that have a computer and an Internet connection. [Executive Summary in html format](#)

The Survey Instrument and Raw Data are posted at <http://www.bls.census.gov/cps/computer/computer.htm>. This U.S. Census Bureau site contains the survey questionnaire and search tools to access the raw data used in this study.

Previous Reports in the Falling Through the Net Series



Falling Through the Net: Defining the Digital Divide

Released July 8, 1999, revised November 1999. Third report in the Falling Through the Net series on the Telecommunications and Information Technology Gap in America.

A PDF version of the report is also available (500KB).

July 1998: Falling Through the Net II: New Data on the Digital Divide

July 1995: Falling Through the Net: A Survey of the "Have Nots" in Rural and Urban America

Fact Sheets on the Digital Divide (July 1999)

- [Americans Increasingly Use Internet Outside the Home](#)
- [Americans Using Internet for Many Tasks](#)
- [Education: Boosting the Odds for Internet Use](#)
- ["Digital Divide" Widening at Lower Income Levels](#)
- [Government Programs Designed to Close the Divide](#)
- [Hispanics Falling Back in Information Age](#)
- [In Information Expansion, Blacks Lag Behind](#)
- [Native Americans Lacking Information Resources](#)
- [Racial Divide Continues to Grow](#)
- [Rural Areas Magnify "Digital Divide"](#)



- Single-Parent Households At Information Disadvantage

Partnerships for Bridging the Digital Divide

- **Ameritech Digital Campuses**
Ameritech, National Urban League
- **Oprah Goes Online**
Carsey Warner, Harpo Communications, Oxygen Media
- **Urban Challenge**
3Com
- **Digital Divide Clearinghouses**
America Online, Benton Foundation, National Urban League

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