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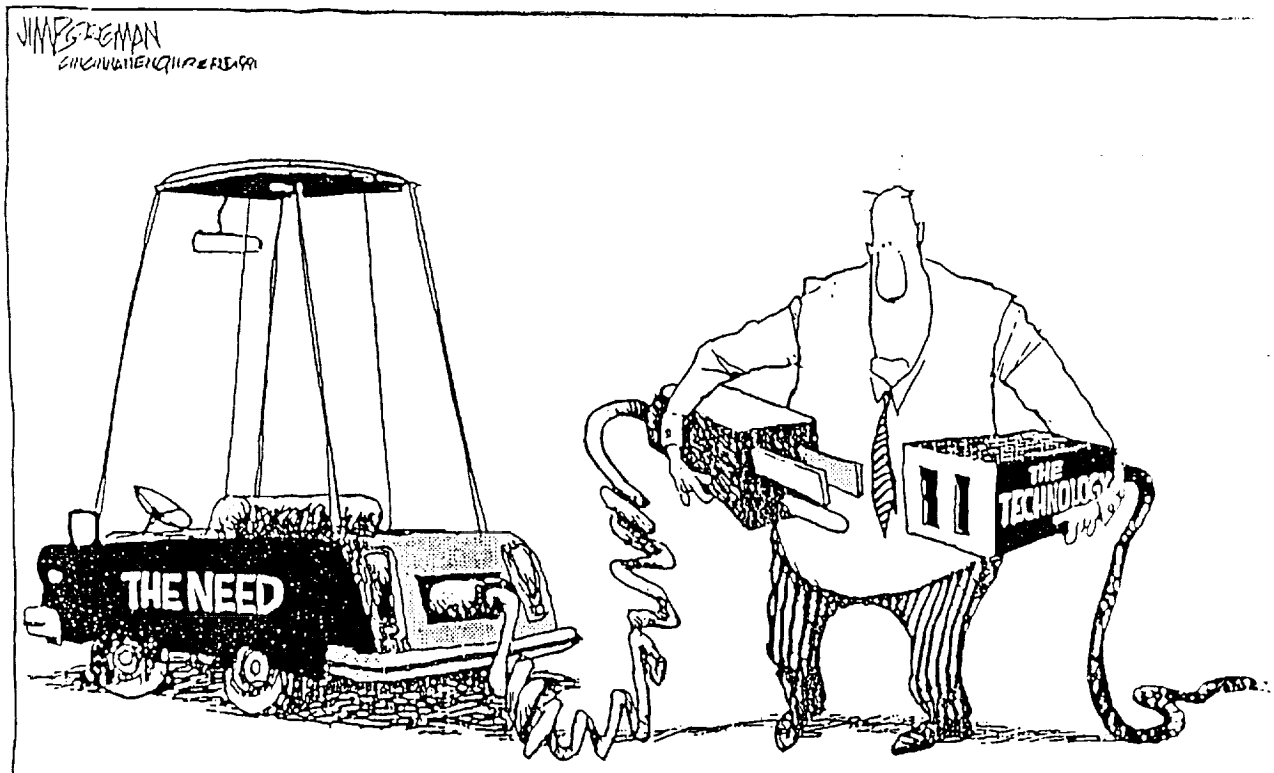
TECHNOLOGY TRANSFER

FRANK E. PENARANDA

NASA HEADQUARTERS



Los Angeles Times - June 13, 1991

NASA
National Aeronautics and Space Administration
Office of Commercial Programs

The Current Challenge

"If America is to maintain and strengthen our competitive position, we must continue not only to create new technologies but learn to more effectively translate those technologies into commercial products"

President George Bush
November 13,1990

CU-3298-6 2/7/92

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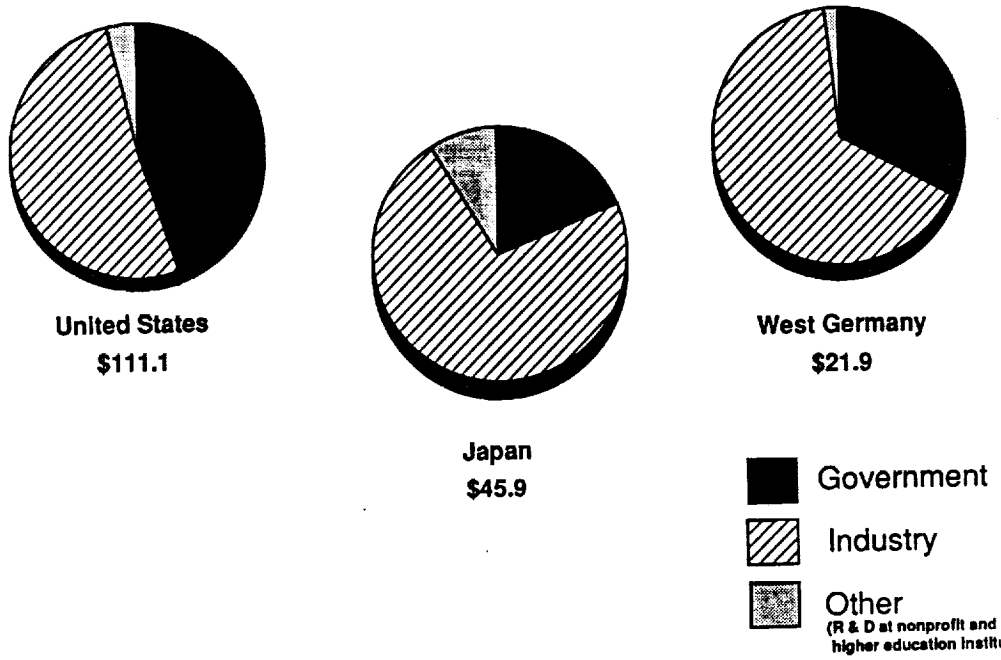
Office of Commercial Programs

International Comparison of R & D Expenditures in 1989



Note: $ in Billions of Constant 1982 Dollars
Source: National Science Foundation

CU-3298-2 2/7/92

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Office of Commercial Programs

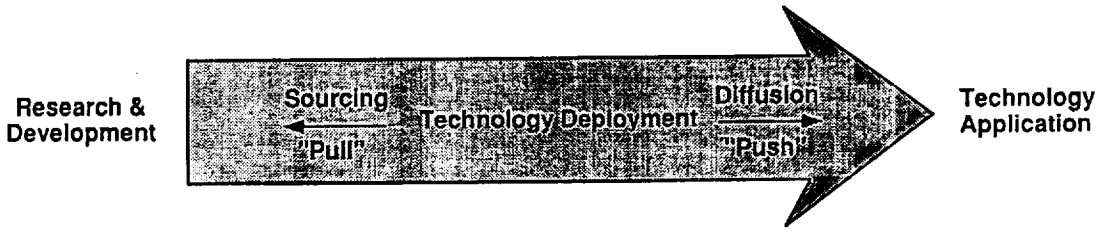
International Comparison of R & D Expenditures in 1989

	United States	Japan	West Germany
Billions of Constant 1982 Dollars	$111.1	$45.9	$21.9
Source of Funds:		. . . . *Percent*	
Government	45	19	33
Industry	51	72	65
Other	4	9	2

Source: National Science Foundation

CU-3298-3 2/7/92

Technology Transfer



Producers

- Federal R&D Agencies
  - Laboratories
  - Contractors
  - Universities

Intermediary Programs/ Organizations

- Federal Agency /TT Programs
- Federal Lab ORTAs
- NTTC/RTTCs
- State-Level Activities
  - Business/Technology Assistance
  - Incubators, Seed-Capital Funds, Research Parks

End-Users

- U.S. Private Sector
  - Individual Firms
  - Industry/Business Groups

Stakeholders

- Federal/State Agencies
- Federal/State Legislatures
- U.S. Industry/Business Communities
- U.S. taxpayers

CU-3256 10/16/91

NASA
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Office of Commercial Programs

NASA Technology Transfer Program

Two Basic Roles

- **Traditional Role:** Transfer NASA technology for secondary use throughout the U.S. private and public sectors
- **Emerging Role:** Develop the National Technology Transfer Network in cooperation with all Federal R&D agencies

CU-3298-7 2/7/92

NASA
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Office of Commercial Programs

NASA Technology Utilization Program Thrusts for FY 1992 and FY 1993

- Establish and operate a National Technology Transfer Network
  - Facilitate the transfer of all Federal technology to the private sector
  - Assist the Nation's industrial competitiveness objectives
- Streamline and expedite the identification, documentation and dissemination of NASA's emerging technologies
- Shorten the time between technology development and commercial applications
- Increase number of "cooperative agreements" and/or technology applications projects
- Emphasize and maximize economic benefits potential for NASA's technology applications projects

CP-4616- 1 3/18/92

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National Technology Transfer Network

- Core Structure
  - National Technology Transfer Center (NTTC)
  - Six Regional Technology Transfer Centers (RTTCs)
- Other Key Elements
  - Federal R&D Agencies
  - Federal R&D Labs and Centers
  - Federal Laboratory Consortium for Technology Transfer
  - State/Local Agencies and Programs
  - Business/Industry Groups and Associations

Unified Framework

Market-Oriented

CU-3298-8 2/11/92

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NTTC Roles

Intellectual ..... to ..... Operational

- Research/Analysis
  - Technology transfer issues
  - Industry technology needs
- Clearinghouse/Network "Hub"
- Outreach to Industry
- Training and education
- Network development

National Niches

Core, Cross-Cutting Capabilities and Services

CU-3298-4 2/7/92

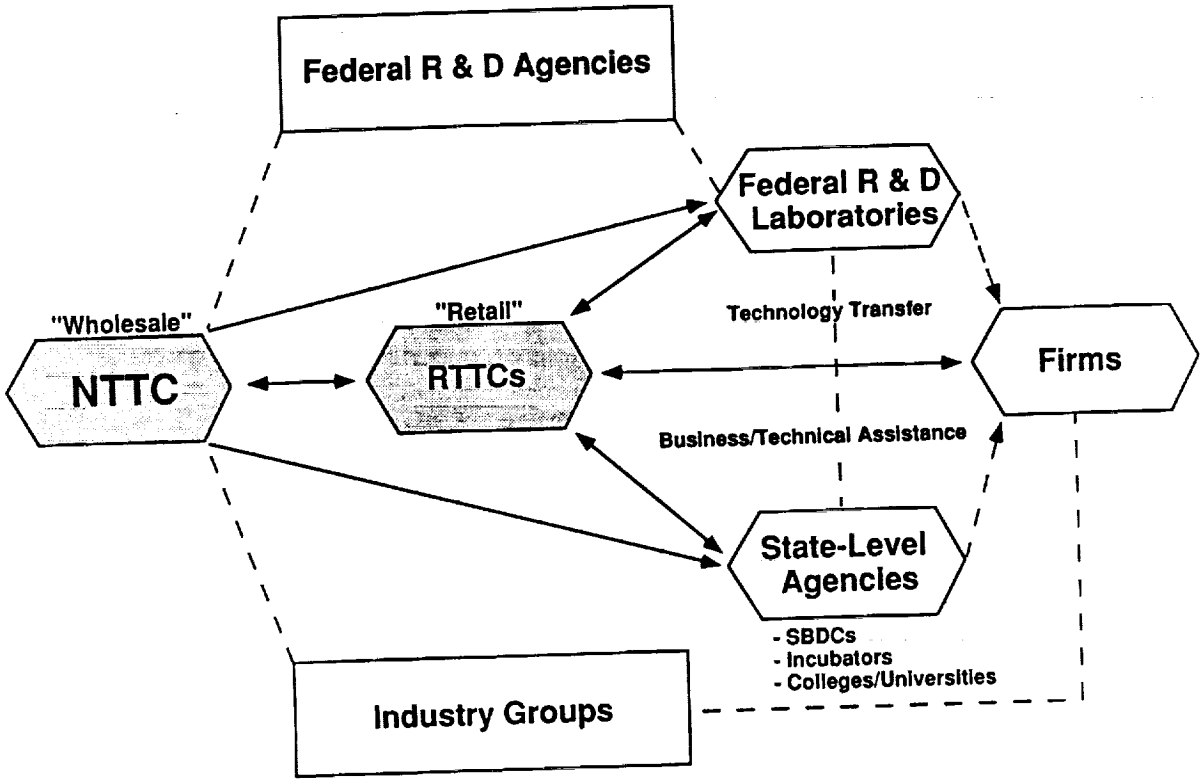
RTTC Roles

- Link together Federal labs, state/local programs and the national network to serve the technology needs of each region's business and industry
- Provide value-added service to business and industrial clients:
  - Information Services involving computerized searches of Federal technology databases
  - Technical Services, including the assessment of technology requirements and potential solutions
  - Commercialization Services assisting the commercial application of Federal technologies
- Promote regional awareness of technology transfer resources and opportunities

Regional Focus

Client-Driven

CU-3296-5 2/7/92



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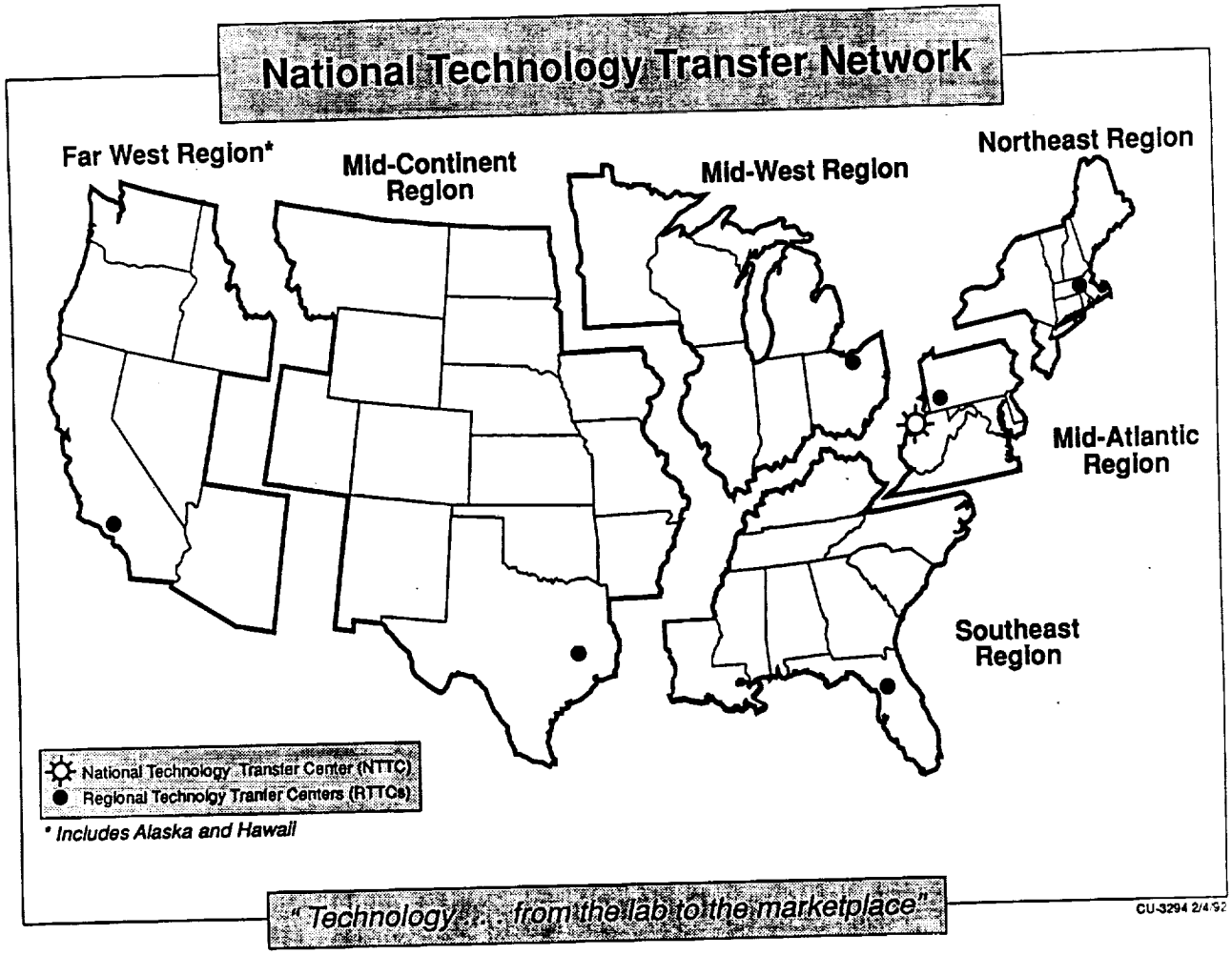
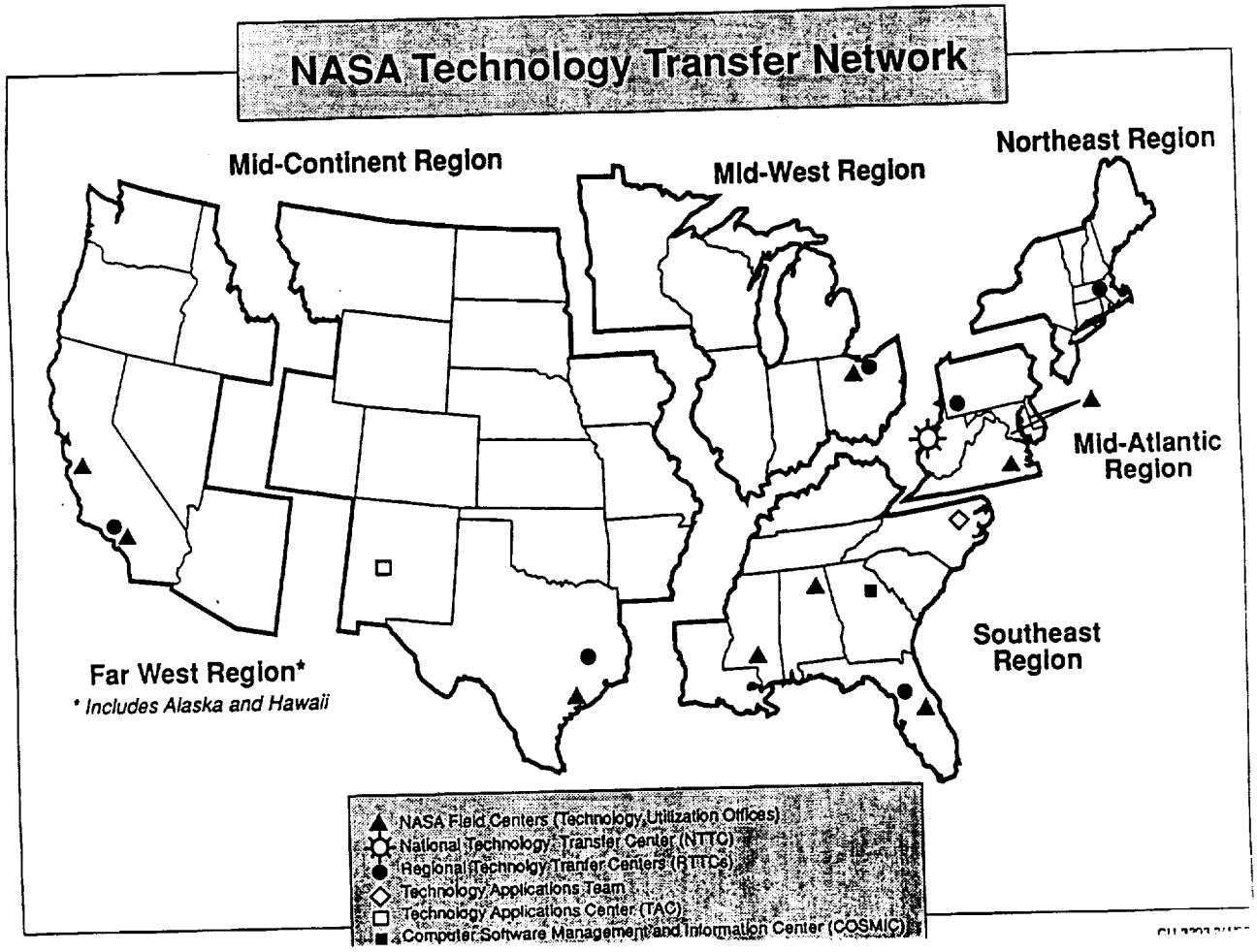
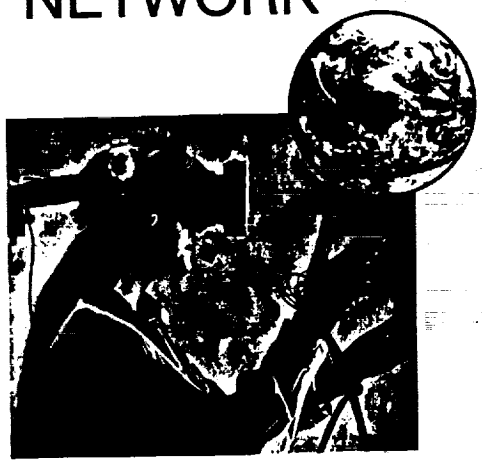

National Technology Transfer Network
Far West Region*
Mid-Continent Region
Mid-West Region
Northeast Region
Mid-Atlantic Region
Southeast Region
National Technology Transfer Center (NTTC)
Regional Technolgy Tranfer Centers (RTTCs)
* Includes Alaska and Hawaii
"Technology . . . from the lab to the marketplace"
CU-3294 2/4/92


NASA Technology Transfer Network
Mid-Continent Region
Mid-West Region
Northeast Region
Mid-Atlantic Region
Southeast Region
Far West Region*
* Includes Alaska and Hawaii
NASA Field Centers (Technology Utilization Offices)
National Technology Transfer Center (NTTC)
Regional Technolgy Tranfer Centers (RTTCs)
Technology Applications Team
Technology Applications Center (TAC)
Computer Software Management and Information Center (COSMIC)

NATIONAL TECHNOLOGY TRANSFER NETWORK



"Technology . . . from the lab to the marketplace."

NATIONAL TECHNOLOGY TRANSFER CENTER

At the direction of Congress, NASA initiated in April 1991 a five-year development program to establish the NTTC as a national resource for Federal technology transfer.

The NTTC's principal mission is to assist all Federal agencies in executing the Federal-wide technology transfer mandate as a means of enhancing U.S. competitiveness. To this end, the NTTC serves as the national "hub" for the network, providing core capabilities and cross-cutting services that accelerate and expand the transfer of Federal technologies to the U.S. private sector.

The NTTC, now in its initial phase of development, is currently establishing key capabilities and services to:

- Serve as the national clearinghouse for Federal technology transfer, linking U.S. firms and industry with Federal agencies and laboratories, the RTTCs, and state and local agencies;
- Provide training and education services to government and industry to develop the individual skills and organizational approaches critical to technology transfer.

In addition, the NTTC conducts national outreach and promotional activities to improve U.S. private sector awareness of technology transfer resources and opportunities. Overall, NTTC activities in these and other areas complement and support private and public sector technology transfer efforts across the United States.

REGIONAL TECHNOLOGY TRANSFER CENTERS

The RTTCs, established in six regions spanning the United States, began operations in January 1992. The new centers, which replaced NASA's longstanding network of Industrial Applications Centers, reflect NASA's initiative to upgrade and restructure its technology transfer program in order to better serve U.S. business and industry in the 1990s and beyond.

The regional deployment, aligned with the six Federal Laboratory Consortium regions and covering all 50 states, allows the centers to work closely with a wide range of Federal, state and local programs in serving the technology and related business needs of the firms and industry in each region.

The RTTCs also utilize the NTTC and the national network to access technologies from throughout the Federal R&D base and link together additional capabilities and services from the NTTC and others across the United States to best meet their client's technology and related needs.

The RTTCs provide value-added services to meet the technology needs of individual business and industrial clients. These include:

- Information Services: computerized searches of Federal technology databases and other technology sources.
- Technical Services: assessment of technology requirements, analysis of technology applications, and engineering reports.
- Commercialization Services: technology brokering, business analyses and venture capital sourcing.

In addition to these core services, the RTTCs also conduct industry or technology based initiatives and activities addressing the particular needs and conditions of each region's industrial base and overall economy.

The surgeon is using a self-contained instrument, derived from NASA technology, thus offering greater freedom in the operating room (below).

"Working together to strengthen U.S. competitiveness. . ."

For further information, contact the National Technology Transfer Network.

NATIONAL TECHNOLOGY TRANSFER NETWORK

"If America is to maintain and strengthen our competitive position, we must continue not only to create new technologies but learn to more effectively translate those technologies into commercial products."

- President George Bush
November 13, 1990

PURPOSE AND OBJECTIVES

- The Federal R&D base -- involving over 600 laboratories and centers -- produces a robust supply of proven and promising technologies that have secondary applications throughout the commercial and industrial sectors.
- The purpose of the National Technology Transfer Network is to provide an effective, market-oriented means of deploying technologies from the Federal R&D base to meet the technology needs of the U.S. private sector.

Objectives of the network include:

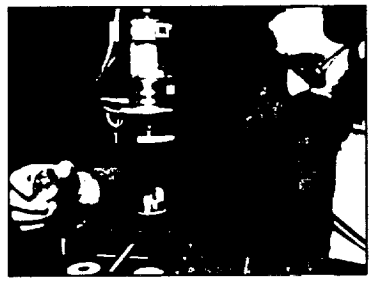
- Facilitate rapid access by U.S. firms and industry to the Federal R&D base and to the full range of technology transfer capabilities and services available throughout the United States; and,
- Foster cooperation and partnerships with Federal, state and local organizations and programs working to advance the technological competitiveness of U.S. firms and industry.

NETWORK ELEMENTS

The National Technology Transfer Center (NTTC) and the six Regional Technology Transfer Centers (RTTCs) form the core structure for the overall network. Other key elements are:

- Federal agency technology transfer programs and activities;
- Federal laboratories and centers;
- Federal Laboratory Consortium for Technology Transfer;
- State and local agencies and programs, including technology centers and business/technical assistance services; and,
- Business and industry consortia, associations, and communities.

Overall, the network provides a national framework for the public and private sectors to work together productively to enhance the economic competitiveness of the United States.



A researcher from Sandia National Laboratories demonstrates a robot using a new software program that enables a robot to "program itself."

NATIONAL TECHNOLOGY TRANSFER NETWORK

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Mr. J. Ronald Thornton, Director

*Alaska and Hawaii included in Far West Region