

Federal Laboratory Consortium

FLC

for Technology Transfer



Annual Report to Congress

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Message from the Chair

On behalf of the members of the Federal Laboratory Consortium for Technology Transfer, I am pleased to present the FLC Annual Report for Fiscal Year 2002 in accordance with 15 U.S.C. 3710 (e)(6), which requires the Chair to submit an annual report to the President, Congress, and appropriate agencies concerning the FLC's activities and expenditures during the year for which the report is made. The purpose of this report is to document, as required by law, the FLC's activities and expenditures in meeting our statutory mandates and the needs of those we serve in the important role of encouraging technology transfer.



Each year our nation makes a significant investment—\$70 billion—in research and development (R&D) and test and evaluation (T&E)¹ to transfer federal technologies to the private sector to meet the needs of commercial users. The technology transfer partnership between our primary stakeholders—federal laboratories and agencies, industry, academia, and state and local governments—is a crucial component of the investment and, as the nation's "only government-wide forum for technology transfer," the FLC's mission is to facilitate these partnerships to their fullest potential.

We at the FLC work with our main stakeholders to make technology transfer possible. We provide information about partnership opportunities available between federal laboratories and industry, academia, and state and local governments. We provide access to specialized technologies, scientific expertise and laboratory resources, and assist with establishing partnerships for continued R&D in every scientific field. This collaborative activity guarantees that the resulting transfer of technology benefits all partners and that the FLC helps to strengthen the U.S. economy.

Thanks to the FLC's efforts in assisting member agencies and laboratories with moving technologies out of federal laboratories, more and more of these technologies are making an impact. From increasing the durability of sports equipment to improving the health and quality of life for our elderly, federally developed technologies are making a difference in our lives.

The role of FLC member laboratories in this era of homeland security has never been more important. Our technologies are being used in many areas—from enhanced airport security to devices that aid soldiers on the frontlines. We have continued to provide our stakeholders with technology transfer services and well-managed programs as part of an ongoing commitment to integrate the significant resources that federal laboratories have to offer into the national economy. In the following pages, I invite you to read about the FLC's contributions, capabilities and accomplishments, and the many ways in which the FLC benefits our stakeholders and the nation at large.

A handwritten signature in cursive script that reads "Ann Rydalch".

Ann Rydalch

Federal Laboratory Consortium for Technology Transfer

¹Throughout this document, R&D includes test, evaluation, and engineering activities of the federal government.



TABLE OF CONTENTS



Introduction 1



About the FLC 3



Strategic Goal

Enhance Communication 7



Strategic Goal

Leverage Federal Research
and Development Investment 15



Strategic Goal

Improve and Innovate the Technology
Transfer Process 23



Appendix A

Audit Statement A-1



Appendix B

FLC Benefits Package B-1



The FLC is the national network of federal laboratories that provides the forum for developing strategies and opportunities for linking laboratory mission technologies and expertise with the marketplace.



Vision

The vision of the FLC is to actively promote the fullest application and use of federal research and development by providing an environment for successful technology transfer. The Consortium will be the recognized leader in maximizing collaborative research and the transfer of federal technologies to enhance the socioeconomic well-being of the nation in the global marketplace.



Mission

The mission of the FLC is to add value to the federal agencies, laboratories, and their partners to accomplish the rapid integration of research and development resources within the mainstream of the U.S. economy.



Strategic Goals and Objectives

- ◆ Enhance Communication by Expanding Communication Among Member Agencies and Their Laboratories
 - Increase dialogue with state and local governments, businesses, academia, and other external participants
 - Publicize best practices, solutions, and success stories
- ◆ Leverage Federal Research and Development Investment
 - Explore innovative approaches to technical assistance and other technology transfer activities
 - Reduce time, cost, and risk of R&D projects
 - Increase cost-sharing collaborations
 - Increase use of federal technology by all participants
- ◆ Improve and Innovate the Technology Transfer Process
 - Characterize and analyze agency technology transfer policy, procedures, and activities
 - Address barriers to technology transfer identified by external participants and others
 - Provide fundamental and advanced education and training to enhance the technology transfer profession
 - Provide federal agencies with an analysis of key performance measurement elements and assessment options



FLC Assets

- ◆ Statutory chartered network of agencies, including more than 700 labs and technical facilities
- ◆ Focal point for timely internal and external access to federal R&D activities
- ◆ Broad-based forum for technology transfer issues resolution
- ◆ Cost-effective mechanism for training, outreach, and partnering
- ◆ Proven regional networks and resources
- ◆ Objectivity, credibility, and outstanding performance recognized and accepted by stakeholders



I N T R O D U C T I O N

About the FLC Annual Report

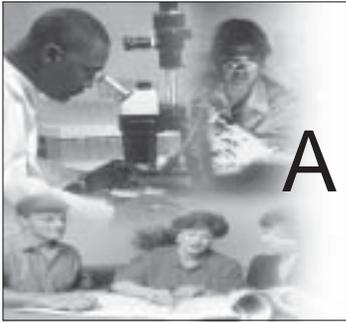
The Federal Laboratory Consortium for Technology Transfer (FLC) is required by 15 U.S.C. 3710(e)(6) to submit a report to the President, Congress, and appropriate agencies “not later than one year after October 20, 1986, and every year thereafter.” In accordance with this statutory mandate, the FLC is providing this report for Fiscal Year (FY) 2002.

Like the agencies of the federal government, as well as many other organizations in the public and private sectors, the FLC has adopted a performance-based approach for its activities. With its statutory mandates (detailed in 15 U.S.C. 3710(e)) as a starting point, the FLC developed a mission statement, vision, strategic plan, goals and objectives, and a planning and evaluation process for the use of its resources that are consistent with such an approach. The purpose of this report is to provide, as required by law, information on the FY2002 activities and expenditures of the FLC in meeting our mandates and the needs of those we serve in the important role of fostering technology transfer.

The methodology followed by the FLC is consistent with guidelines that have been developed under the Government Performance and Results Act (GPRA). Because the outcomes of technology transfer activities are extremely difficult to quantify, this report includes quantifiable data, anecdotal evidence of success, and discussion of nonmetric evaluation measures. In addition, the FLC’s methodology focuses on what value the FLC adds to the federal government’s technology transfer process. It is not intended to focus on the specifics of lab or agency technology transfer activities, which would be reported under their individual GPRA reporting efforts. However, it is not unlikely that some of the same measures and outcomes might be used by both. Finally, performance data are derived both internally and externally. Internal reviews consist of reports provided by regions and committees; external reviews consist of qualitative reports and anecdotal data solicited via questionnaires and followup surveys.

This report briefly describes the FLC’s structure, mission, vision, statutory mandates, and strategic goals and objectives, and provides detailed information on the FLC’s activities and expenditures during FY2002 in accordance with its statutory mandates, and strategic goals and objectives.





ABOUT THE FLC

Mandates, Vision, Mission, Goals, Objectives, and Strategies

The FLC was established in 1974 and incorporated by Congress in the Federal Technology Transfer Act of 1986 (P.L. 99-502), which provided the FLC with a charter and statutory mandates. To implement these mandates, the FLC prepared a strategic plan, which describes its vision, mission, goals, objectives, and strategies. While the vision and mission describe the overall purpose of the FLC's activities, the goals identify what must be done to achieve that purpose. In turn, the objectives detail the plan to implement the goals. All of the statutory mandates are fully supported by the goals and objectives—providing the FLC with a strong foundation on which to operate and plan its future.

Statutory Mandates

- ◆ Develop and administer techniques, training courses, and materials concerning technology transfer to increase the awareness of federal laboratory employees regarding the commercial potential of laboratory technology and innovations.
- ◆ Furnish advice and assistance to federal agencies and laboratories for use in their technology transfer programs.
- ◆ Provide a clearinghouse for requests for technical assistance from states and units of local governments, business, industrial development organizations, and not-for-profit organizations, including universities, federal agencies and laboratories, and other persons.
- ◆ Facilitate communication and coordination between Offices of Research and Technology Applications (ORTAs) of federal laboratories.
- ◆ Utilize the expertise and services of federal agencies for technology transfer.
- ◆ Facilitate the use of appropriate technology transfer mechanisms.
- ◆ Assist federal laboratories in establishing programs by using technical volunteers to provide technical assistance.
- ◆ Facilitate communication and cooperation between ORTAs and regional, state, and local technology transfer organizations.
- ◆ Assist colleges or universities, businesses, nonprofit organizations, state or local governments, or regional organizations with establishing programs to stimulate research and encourage technology transfer.
- ◆ In each FLC region, seek advice on the effectiveness of the program from representatives of state and local governments, large and small businesses, universities, and appropriate persons.

Mission

The FLC shall provide the forum for education, training, and laboratory networking to enhance professional development and recognize excellence in federal technology transfer.

- ◆ Work with the Director of the National Institute on Disability and Rehabilitation Research to compile a compendium of current and projected federal laboratory technologies and projects that have or will have an intended or recognized impact on the available range of assistive technologies for individuals with disabilities.

Strategic Goals and Objectives

- ◆ Enhance communication
 - Expand communication among member agencies and their laboratories
 - Increase dialogue with state and local governments, businesses, academia, and other external participants
- ◆ Publicize the best technology transfer practices, solutions, and success stories
 - Leverage R&D investments

Vision

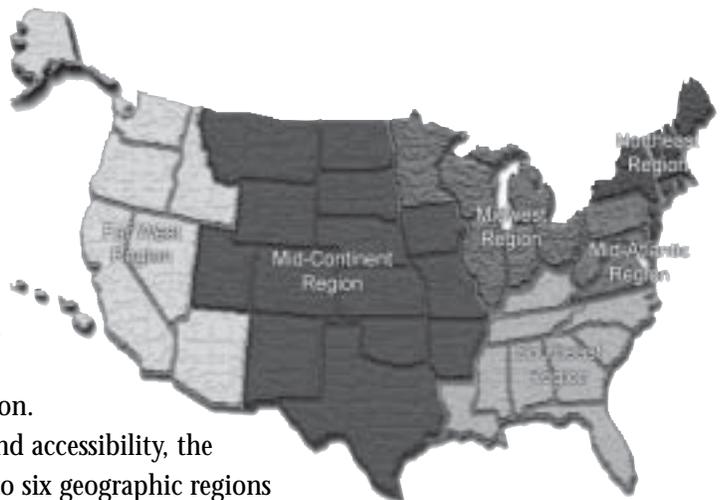
The FLC membership will be the recognized leaders for the transfer of federal technology to the marketplace.

- Explore innovative approaches to technical assistance and other technology transfer activities
- Reduce the time, cost, and risk of R&D projects
- Increase cost-sharing collaborations
- Increase the use of federal technology by all participants
- ◆ Improve and innovate the technology transfer process
 - Provide fundamental and advanced education and training to enhance the technology transfer profession
 - Characterize and analyze agency technology transfer policy, procedures, and activities
 - Address technology transfer barriers identified by external participants and others
 - Provide federal agencies with analyses of key technology transfer performance measurement elements and technology assessment options.

Structure

The FLC is governed by an Executive Board, which comprises the Chair, Vice-Chair, Finance Officer, Recording Secretary, Regional Coordinators, Committee Chairs, Members-at-Large, Washington, DC Representative, National Advisory Council Chair, and Host Agency Representative. The Chair, Vice-Chair, Finance Officer, Recording Secretary, and Members-at-Large are elected by the entire membership, while Regional Coordinators are elected by members of a region. Committee Chairs, the National Advisory Council Chair, and the Washington, DC Representative are appointed by the FLC Executive Board. The Chair serves as the FLC's principal executive officer and official spokesperson.

To better facilitate communication and accessibility, the FLC's national network is organized into six geographic regions



—Far West, Mid-Atlantic, Mid-Continent, Midwest, Northeast, and Southeast. Every two years, each region elects a Regional Coordinator and Deputy Coordinator, who function as the primary link with the national FLC organization and potential users of federal technology in their regions.

To effectively implement its strategic plan, the FLC has nine committees, which have been given specific charters and duties—including responsibilities for implementing various strategic goals and objectives. Current committees include Awards, Education and Training, Finance, Legal Issues, Marketing and Public Relations, National Advisory Council, Planning and Policy, Program, and State and Local Government.



Resources

In accordance with the statutory framework for funding the FLC (which is specified in 15 U.S.C. 3710(e)(6)(A)²), the FLC requested funding from federal departments and agencies based on each agency's intramural budget (Figure 1). For FY2002, the budget was \$2,090,520. The allocation of fiscal year funds implements the FLC's strategic goals (Figure 2) and statutory mandates (Figure 3).

Department	Total Agency Budget	FLC Contribution from Agencies	Prior Year Debt
<i>Agriculture</i>	\$1,268,200,000	\$101,526	
<i>DOC</i>			
NIST	\$255,900,000	\$20,472	
NOAA	\$648,300,000	\$51,880	
Other	\$7,200,000	\$576	
<i>DOD</i>			
Air Force	\$1,078,600,000	\$111,192	
Army	\$1,860,700,000	\$157,288	
Navy	\$3,362,800,000	\$276,336	
Advanced Res. Projects Agency	\$219,600,000	\$30,184	
Missile Defense Agency	\$515,400,000	\$45,192	
Chemical & Biological Defense	\$203,300,000	\$0	
Def Information Systems Agency	\$64,000,000	\$6,032	
Def Logistics Agency	\$31,600,000	\$2,576	
Defense Threat Reduction	\$57,400,000	\$5,584	
Joint Chiefs	\$60,000,000	\$4,800	
Special Operations Com.	\$77,800,000	\$12,000	\$5,776
TriCare Mgmt Activity	\$4,900,000	\$392	
Wash. Headquarters Svcs	\$291,500,000	\$139,048	\$107,120
Operational Test & Evaluation	\$71,100,000	\$7,680	
<i>DOE</i>	\$510,100,000	\$362,936	
<i>EPA</i>	\$321,000,000	\$25,680	
<i>HHS</i>	\$4,133,700,000	\$361,088	
<i>Interior</i>	\$497,400,000	\$39,792	
<i>Justice</i>	\$17,400,000	\$1,472	
<i>NASA</i>	\$1,814,900,000	\$241,592	
<i>NSF</i>	\$20,300,000	\$15,456	
<i>Transportation (DOT)</i>	\$213,800,000	\$18,952	
<i>Treasury</i>	\$59,500,000	\$4,760	
<i>Veterans Affairs</i>	\$360,200,000	\$28,816	
Total	\$18,026,600,000	\$2,090,520	\$112,896

Figure 1. Agency Contributions to the FLC for FY2002

² Subject to subparagraph (B), an amount equal to 0.008 percent of the budget of each federal agency from any federal source, including related overhead, that is to be utilized by or on behalf of the laboratories of such agency for a fiscal year referred to in subparagraph (B)(ii) shall be transferred by such agency to the National Institute of Standards and Technology at the beginning of the fiscal year involved. Amounts so transferred shall be provided by the Institute to the Consortium for the purpose of carrying out activities of the Consortium under this subsection.

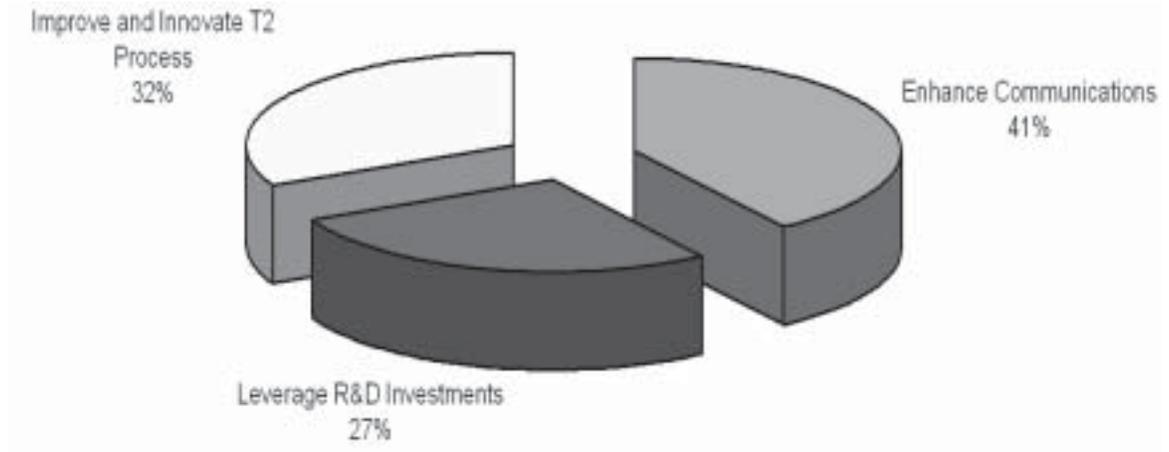


Figure 2. FLC FY2002 Budget Applied to the Strategic Goals (FY2002 Budget - \$2,090,520)

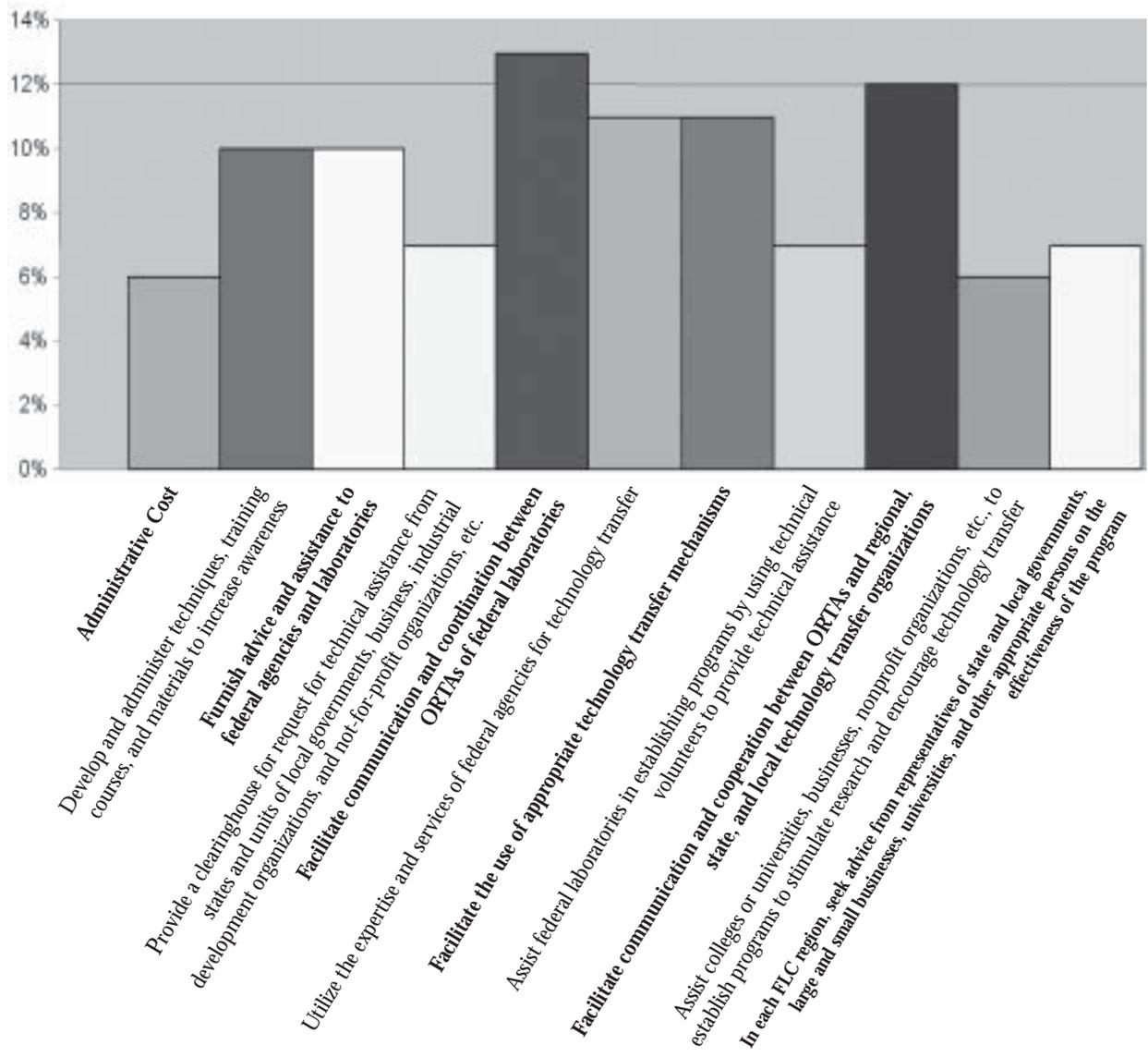


Figure 3. FLC FY2002 Budget for Each Mandate for the Strategic Plan



STRATEGIC GOAL

Enhance Communication

To facilitate technology transfer between and among member agencies and laboratories, the FLC must establish effective communication and increased dialogue with state and local governments, industry, academia, and other external customers. To implement this goal, the FLC is working to achieve the following objectives:

- ◆ Expand communication among member agencies and their laboratories.
- ◆ Increase dialogue with state and local governments, industry, academia, and other external participants.
- ◆ Publicize best practices, solutions, and success stories.

Objective:

Expand communication among member agencies and their laboratories

Electronic Communication

The FLC provides a state-of-the-art electronic communications system that links FLC representatives to its stakeholders—Congress, agencies, laboratories, industry, academia, and state and local governments. This system provides a work group environment for e-mail and file transfer for all FLC members—as well as specific member interest groups—that enhances the ability of agencies and labs to share information on topics such as:

- ◆ Cooperative R&D, licensing, and partnership opportunities
- ◆ Legislative and policy developments from Washington, D.C.
- ◆ Upcoming meetings and trade shows
- ◆ Regional and national initiatives
- ◆ Public relations opportunities.

The FLC electronic communication system comprises 35 special interest group roundtables—including roundtables for regions, committees, individual departments and agencies, and partnership initiatives. In FY2002, more than 8,000 e-mails were generated among the more than 3,800 roundtable subscribers.

Web Site

The FLC maintains a web site (www.federallabs.org) that serves as a technology transfer portal for member laboratories, agencies, and potential partners. In FY2002, nearly 73,000 total visitors accessed the site. The site provides members and potential partners with information about technology transfer within the laboratories and serves as a launching pad to hundreds of federal laboratory web servers.

One of the FLC's most versatile means of internal and external communication, the web site is a key way to enhance communication with external participants and often is used by FLC members and affiliates. The web site also enables many people to identify and connect to several hundred federal laboratory web sites and their agency umbrella web sites. The web site attracts a wide variety of visitors, as indicated on Figure 4.

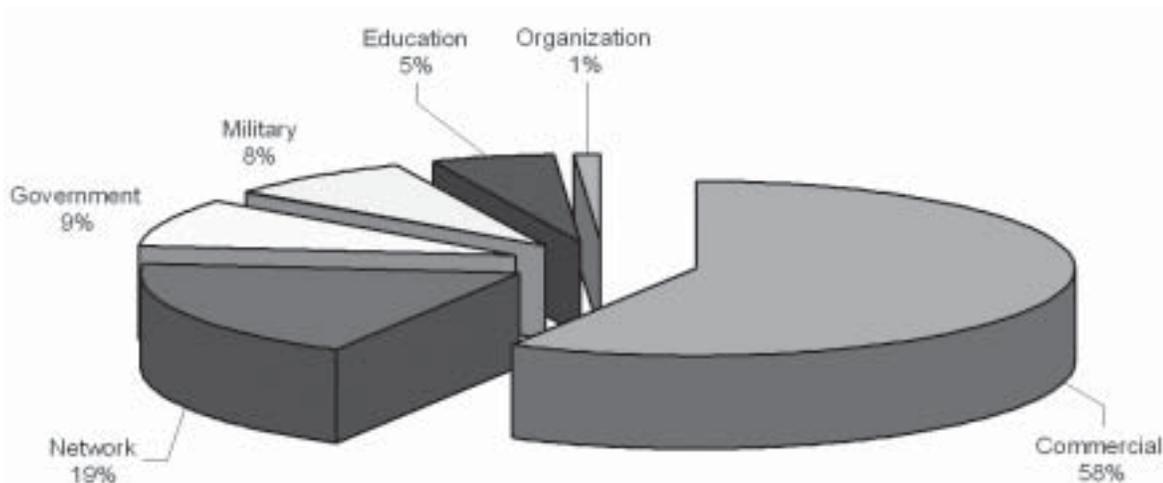


Figure 4. Cross-section of the Nearly 73,000 Visitors Who Accessed the FLC Web Site

In FY2002, the FLC continued to enhance and upgrade its dynamic web site to meet or exceed the requirements of its customer base. The web site is more user-friendly and continues to include features such as FLC contact information; enhanced criteria to provide extensive search capabilities; highlights of individual success stories and technologies on the home page; and quick access to meeting information, the Technology Locator, and FLC-related materials and web sites.

Data provided on the web site are: links to regional web sites; newsletters from 1996 to the present; news stories about the FLC and technology transfer; information on the Technology Locator; a continually updated inventory of technologies available for transfer; federal legislation and policy related to technology transfer; available publications; links for more than 200 lab and technology transfer web sites; information on awards; and a calendar of upcoming technology transfer events and FLC exhibits. New features added to the FLC web site in FY2002 include the Commercialization Assistance Mentoring Program (CAMP); a full archive of the Awards Program; the *Technology Transfer Desk Reference*; a navigation bar and a three-dimensional color map for the six regions; an HTML version of *FLC NewsLink*; and a redesigned calendar of events.

Meetings

The FLC holds regular meetings to strengthen communication among members and potential customers, stimulate interest in technology transfer, and provide education and training in technology transfer issues and procedures. In FY2002, the FLC's annual national meeting attracted 269 attendees. Although most attendees were from federal laboratories and agencies (approximately 70%), a significant number of representatives from industry (approximately 12%), other technology transfer organizations (approximately 11%), and academia (approximately 1%) attended as well.

Each annual national meeting provides a forum for formal and informal exchanges of information among representatives of member laboratories and agencies, as well as potential partners from state and local government, industry, and academia. The FY2002 national meeting, "Moving Forward with

the FLC,” held in Little Rock, Ark., offered training sessions that included fundamentals (“Building a Foundation for ORTA and Legal Staff”) and advanced (“Best Practices and Lessons Learned from Professionals,” “The Anatomy of CRADAs and License Agreements: An In-Depth Review of the Most Common Technology Transfer Instruments,” “CRADA Review,” and “License Review”). Additional events at the national meeting featured committee meetings; regional and agency meetings; and presentations, workshops, and panel discussions, all of which focused on the needs of the member laboratories and agencies, the FLC as an organization, and technology transfer issues. In addition, the meeting provided a showcase for the awards program and a venue for agencies and services to meet and discuss how FLC activities and resources improve the way in which technology transfer is conducted. To reinforce the effectiveness of the national meetings, a CD-ROM containing the proceedings of each session was distributed to all attendees.

In addition to the national meeting, regular meetings were also held by the FLC regions—typically a two-day meeting focused on the specific needs and interests of the region’s laboratories. Each region also held a regional meeting in conjunction with the national meeting. Regional meetings generally feature training, networking forums, discussions of regional initiatives, lab overviews, lab/industry technology forums, marketing strategies, award presentations, and sharing of success stories. In FY2002, the following regular regional meetings were held:



- ◆ **Far West Region**—The Far West Region held three meetings. A regional meeting in Anaheim, Calif., was attended by 8 members; a second meeting, held jointly with the Mid-Continent Region in Jackson Hole, Wyo., was attended by 50 members; a meeting held in conjunction with the national meeting was attended by 24 members.
- ◆ **Mid-Continent Region**—Approximately 60 members attended the FLC Regional Roundup in Jackson Hole, Wyo. The meeting provided attendees the opportunity to learn about tools and techniques to market their technology transfer projects, online educational opportunities, and technologies related to homeland security. A meeting held in conjunction with the national meeting was attended by 30 members.
- ◆ **Midwest Region**—The Midwest Region held a meeting in conjunction with the national meeting that was attended by 16 members.
- ◆ **Southeast Region**—A regular regional meeting was held in Orlando, Fla., and was attended by 22 members; a meeting held in conjunction with the national meeting was attended by 15 members.
- ◆ **Mid-Atlantic Region**—The Mid-Atlantic Region held a meeting in conjunction with the national meeting that was attended by 30 members.
- ◆ **Northeast Region**—A regional meeting in Newport, R.I., provided training, presentations, and discussions of various technology transfer concepts and approaches to the 36 members who attended. A second meeting held in conjunction with the national meeting was attended by 24 members.

Publications

Publications are also an effective means of enhancing communication. In FY2002, the FLC combined three national newsletters – *NewsLink*, *FLC Insider*, and *EduLink* – into the all-encompassing *FLC NewsLink*. *FLC NewsLink* was also made available electronically through the FLC web site. In

addition, four of the FLC's regions published regular newsletters, some of which were available electronically.

FLC NewsLink. *FLC NewsLink* is one of the FLC's key vehicles for communicating with its member agencies, laboratories, and external partners. Each issue of *FLC NewsLink* highlights a specific technology area—such as assistive technology, law enforcement, sensors, and manufacturing—enabling the FLC to keep members and interested external partners informed about federal technology transfer news, technologies, research, success stories, web sites, and meetings.

FLC NewsLink technology topics included, but were not limited to agriculture, photonics, sensors, computers, automotive, transportation, biotechnology, food processing, manufacturing, assistive technology, law enforcement, electronics, materials, composites, energy, firefighting, environmental, and medical.

The newsletter's coverage of federal technology transfer activities is shown on Figure 5.

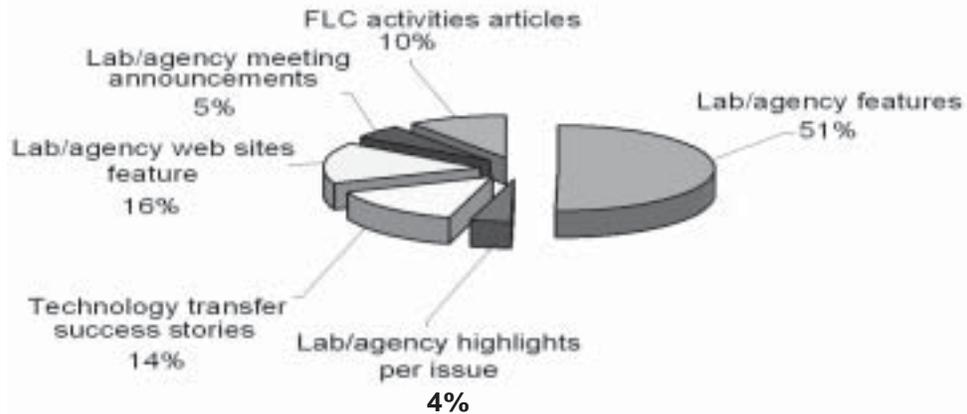


Figure 5. FLC NewsLink Coverage of Federal T2 Activities

In replacing *FLC Insider*, a portion of *FLC NewsLink* is now dedicated to educating FLC members about services, activities, and events. In addition, the newsletter provides training and educational articles designed to augment job performance. Another goal of the publication is to increase member participation at regional, committee, and national levels by publishing content relevant to these respective FLC entities.



In replacing *EduLink*, a portion of *FLC NewsLink* is now dedicated to expanding communication and dialogue between FLC laboratories and educational institutions at all levels. A product of the Education and Training Committee, E&T articles focus on the processes and techniques that lead to the collaborative R&D efforts of laboratories and academic institutions, resulting in new technologies in the marketplace. The articles report on educational outreach efforts of the laboratories; they also feature information on educational opportunities and internships in technology transfer, and technology management at both universities and laboratories.

In FY2002, ten regular issues and one special awards issue of *FLC NewsLink* were published—with an average monthly distribution of 6,170. The *FLC NewsLink* subscriber base comprises industry, academia, state and local governments, media representatives, professional associations, and federal laboratories and agencies. *FLC NewsLink* is also available electronically (472 subscribers) on the FLC web site, and is distributed at trade shows.

Regional Newsletters. In addition to the FLC's national newsletters, four of the six regions published and distributed newsletters in FY2002. These newsletters highlighted the activities of laboratories in the regions. Collectively, they reached an audience of more than 7,000. FLC regions publishing newsletters included:

- ◆ **Far West Region**—Published biannually; circulation approximately 600 per issue and posted on the web site. Distributed to regional laboratories, small businesses, industry, Small Business Development Centers (SBDCs), and academia involved with Small Business Innovation Research (SBIR) programs in the region.
- ◆ **Mid-Continent Region**—Published quarterly in conjunction with the NASA Mid-Continent Technology Transfer Center; circulation between 5,000-6,000; the target audience is primarily industry. Also published three periodic newsletters containing only Mid-Continent Region news, distributed to approximately 300 lab representatives and lab contacts via mail and the Mid-Continent Region roundtable.
- ◆ **Midwest Region**—Electronically published quarterly; circulation approximately 180; and posted on the web site. Distributed to industry, federal laboratories, and state-sponsored technology transfer organizations.
- ◆ **Northeast Region**—Electronically published one newsletter; circulation approximately 125; and posted to the web site. Distributed to industry, federal laboratories, and state-sponsored technology transfer organizations.

Other Publications. The FLC continued to provide copies of the revised *Green Book* (also known as *Federal Technology Transfer Legislation and Policy*), which provides the principal statutory and presidential executive order policies that constitute the framework of the federal technology transfer program. This publication includes an enhanced subject index that provides ease of use.

The FLC produced the Laboratory Web Site Reference, which lists the web sites of over 260 federal laboratories and research centers. Distributed via mail, trade shows and the FLC web site, the reference provides a convenient portal for government, industry, and academic personnel to enter the federal laboratory system.

Objective:

Increase dialogue with state and local governments, businesses, academia, and other external participants

Technology Locator Service

The FLC Technology Locator Service is a centralized clearinghouse through which the FLC locates a specific federal resource, technology, or expertise sought by potential technology partners. One of the FLC's most popular services, the Technology Locator is essentially a technology matching service—placing its customers in contact with a federal lab that could help meet their needs. Accessible via the web site, telephone or personal contact, the Technology Locator also serves as a point of entry into the federal laboratory system. Because the primary function of the Locator Service is to broker requests and direct inquiries from potential partners to the laboratories, once the Technology Locator identifies a potential match and makes introductions, all arrangements for the technical exchange are between the user and the laboratory. Currently, the FLC is working with both the laboratories and the agencies to develop mechanisms that will provide data indicating the results of Technology Locator Service referrals.

The sources of Locator Service referrals for FY2002 are shown on Figure 6. In FY2002, the Technology Locator reviewed and routed requests from 260 potential partners to the appropriate laboratory or center. Figures 7 and 8 show Technology Locator requests categorized by technology area and by region, respectively.

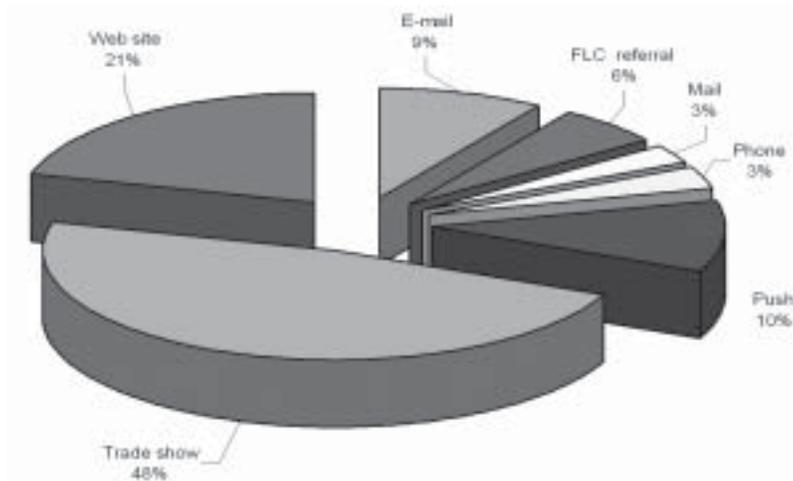


Figure 6. Sources of FY2002 Technology Locator Requests

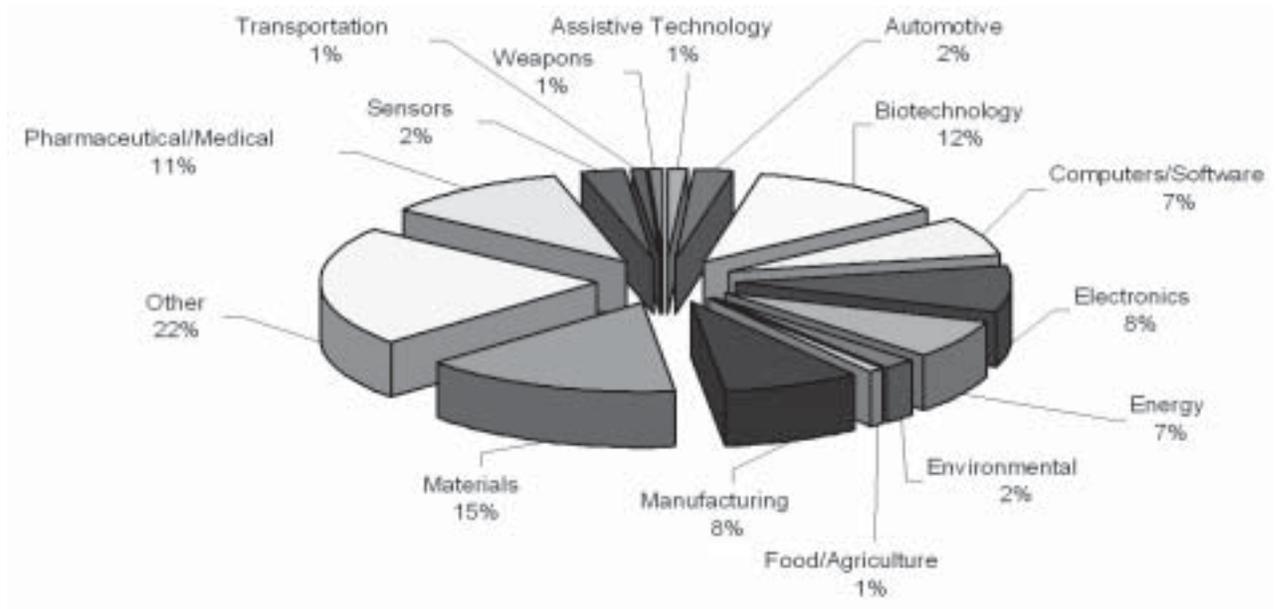


Figure 7. Sources of FY2002 Technology Locator Requests by Technology Area

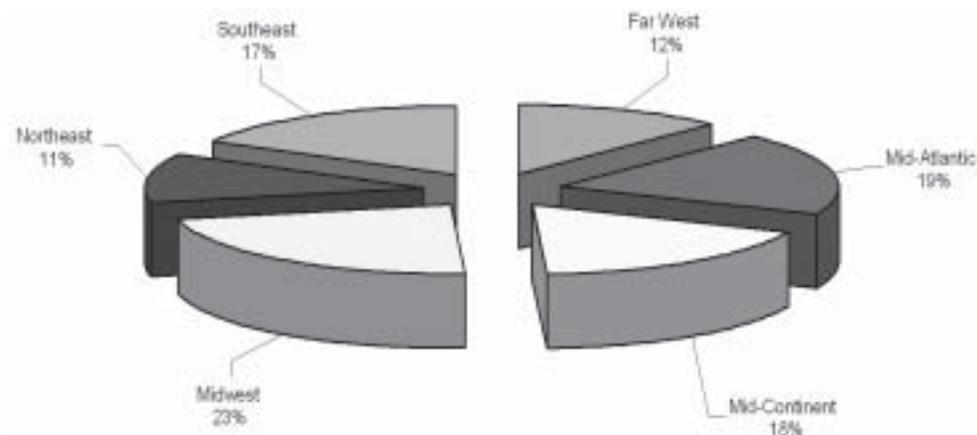


Figure 8. Sources of FY2002 Technology Locator Requests by Region

Trade Shows

The FLC trade show program—in which the FLC exhibits at national trade shows—has been extremely successful at increasing dialogue with state and local governments, industry, and academia. The trade show strategy ensures that the FLC attends the premier shows in its technology focus areas and has helped to guarantee that the FLC reaches the greatest number of industry representatives in



these areas. The FLC's exhibit booth features eye-catching graphics and is designed to effectively communicate what the FLC offers industry.

In FY2002, the FLC exhibited at seven trade shows—Society of Petroleum Engineers, State Science and Technology Initiative, Society of Automotive Engineers, National Design Engineering Show, Biotechnology Industry Organization, Homeland Security Technology Expo, Homeland Defense, and the National Association of Seed and Venture Funds World's Best Technology Showcase. As a result, 306 quality leads with strong potential for partnership opportunities were received. Of these, 124 were

forwarded to the Technology Locator, which resulted in 63 technical requests. In addition, 256 new subscribers were added to the *FLC NewsLink* mailing list.

Target Industries of FLC Trade Shows

- Biotechnology
- Automotive
- Transportation
- Energy/Oil/Gas
- Manufacturing
- Materials
- Assistive Technology
- Electronics
- Photonics

FLC NewsLink and Public Affairs Activities

Members of industry, as well as the academic and state and local government communities, are avid readers of *FLC NewsLink*—as evidenced by the number of queries received in response to articles and anecdotal evidence provided by lab and agency contributors. (Industry, academia, and state and local government make up 75% of the *FLC NewsLink* mailing list.) The *FLC NewsLink* staff fielded numerous requests for subscriptions, additional information about the FLC, assistance in finding a lab to help develop a specific technology, information regarding technologies featured in *FLC NewsLink*, contact information for contributors of articles, and listing a meeting in the calendar of events.



In FY2002, the FLC Marketing and Public Relations (M&PR) Committee began executing its focused public affairs/outreach program by enacting three elements. These elements included targeting the Consortium's key audiences, setting goals to reach those audiences, and obtaining measurable results. The M&PR Committee examined the feasibility of a number of approaches, including paid advertising, development of a marketing plan that included ways to promote laboratory expertise and capabilities, identifying target areas and developing a media directory that would identify prime media contacts, innovative use of the Internet, preparation of a press kit, and preparation of a targeted advertising campaign.

In FY2002, the FLC distributed 12 press releases to publicize its services and benefits, as well as to highlight selected technologies to members of government, industry, academia, and media. The FLC also enhanced its use of electronic communication by disseminating via e-mail over 40 announcements concerning technologies available for licensing, technology transfer events, laboratory events, and FLC news. The FLC made presentations at trade shows, where contact was made with a number of media representatives. The FLC received inquiries from the media requesting assistance in obtaining information regarding technology-related articles.

In addition to responding to specific queries regarding technology, the FLC provided extensive information on technology transfer policies and practices in response to requests for information from the federal community, universities, industry, nonprofit organizations, and international government delegations.

Toll-Free Assistance Line

The FLC maintains a toll-free assistance line to facilitate communication with external participants. An automatic voice-mail answering system answered all incoming calls—with the line being monitored daily and calls forwarded to the appropriate staff. Callers represented all six of the FLC's regions and all target audiences—industry, state and local government, and academia. Typical requests were for information on federal programs and licensing/cooperative R&D opportunities.

Objective:

Publicize best practices, solutions, and success stories

Communicating success stories and innovative technology transfer approaches to federal agencies, laboratories, and external partners helps demonstrate the total impact of federal technology transfer efforts and enables the laboratories to make use of successful approaches developed elsewhere—thereby facilitating more effective technology transfer. In FY2002, the FLC made effective use of national and regional newsletters, the web site, and trade shows to accomplish this objective. Specific details regarding these activities were provided in preceding paragraphs.

The FLC produced and published “hot technology” sheets promoting technologies and services resident within federal laboratories for distribution at trade shows, conferences, and seminars.



STRATEGIC GOAL

Leverage Federal Research and Development Investment

As R&D budgets shrink, both federal laboratories and industry can use technology transfer to share the cost and lower the risk of R&D, decrease development time, increase innovation potential, and increase U.S. competitiveness. To facilitate this goal, the FLC is working to:

- ◆ Explore innovative approaches to technical assistance and other technology transfer activities
- ◆ Reduce the time and risk of R&D projects
- ◆ Increase cost-sharing collaborations to reduce the overall cost of R&D for each partner
- ◆ Increase the use of federal technology by all participants.

Objective:

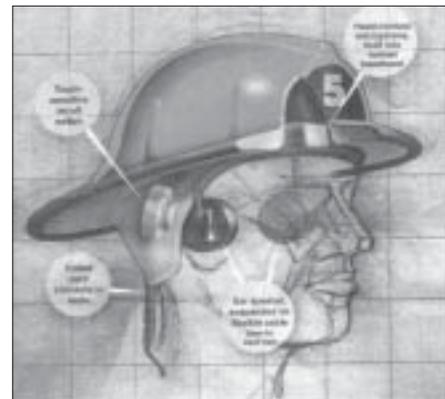
Explore innovative approaches to technical assistance and other technology transfer activities

Fire Fighting Task Force

The Fire Fighting Task Force (FFTF) is an ongoing outreach initiative sponsored by the FLC to enhance firefighter safety by responding to end-user requirements for technological advances. The FFTF has been effective in locating federal technology to support real-life needs of fire personnel by performing needs assessments and evaluating technologies by putting prototypes into firefighters' hands in real fire scenarios. The FFTF initially included 12 federal agencies and 9 major fire departments. While participating federal laboratories identified relevant technologies, the Mid-Atlantic Technology Applications Center (MTAC) focused on locating manufacturers and suppliers to place the items in catalogues so fire services could purchase the new technology devices. In 2001, the scope of the FFTF was greatly expanded to a nationwide initiative by the signing of a Memorandum of Understanding (MOU) between the FLC and the National Fire Protection Association (NFPA)/International Association of Fire Chiefs (IAFC)/Metro Fire Chiefs.

When the MTAC was closed in February 2001, the Mid-Atlantic Region was joined by the NASA Center for Technology Commercialization (CTC) and the Office of Law Enforcement Technology Commercialization as funding stakeholders of the FFTF. However, CTC dropped out of the partnership in FY2002 due to funding restrictions.

The FFTF focuses on seven key areas of firefighting technology. FY2002 accomplishments in the priority areas include the following:



- ◆ **Communications in High Noise Environments.** The Naval Surface Warfare Center (NSWC) has licensed technology using a piezo device as a head contact microphone; the device has been successfully licensed and is available for purchase.

The prototype for EARTALK, a technology developed by the National Institute for Occupational Safety and Health (NIOSH), which incorporates transmitting and receiving devices in custom-made ear molds for communicating through the ear canals while providing protection against hearing loss in high-noise environments, is still being fine tuned. Discussions with NIOSH to license this technology are still in progress.

- ◆ **Enhanced Vision Through Smoke.** The Night Vision and Electronic Sensors Directorate of the U.S. Army Communications - Electronics Command (CECOM), in association with Sage Technologies, developed a helmet and face mask-mounted infrared imaging sensor that can

see through dense, heavy smoke. The device is now being successfully distributed commercially through a nationwide organization, Morningpride. Sales have commenced in the firefighting community.



- ◆ **Personnel Locator and Monitoring Systems.** Technology developed by ITT, under a DARPA contract known as SUO/SAS, has been successfully demonstrated for military urban warfare. Demonstrations have been completed within the firefighting community, and attempts are being made to secure funding to develop a prototype for the first-responder community.

Technology developed by Mesh Networks for audiovisual communication and geolocation is currently being evaluated by the firefighting community. Also under evaluation is a technology developed by Applanix that uses GPS with inertial navigation for inside buildings.

A technology developed by Time Domain and partially funded by the Night Vision & Electronic Sensors Directorate, using ultra wide band (UWB) with time of arrival, is in the development stages.

- ◆ **Improved Fire Apparatus Design and Performance.** Building on discussions between the FFTF and fire apparatus manufacturers regarding fire truck design deficiencies, an MOU among MTAC, Army Aberdeen Test Center, the Fire Apparatus Manufacturers' Association, and the Fire and Emergency Manufacturers and Services Association provides for the cooperative exploration of opportunities in which NASA, Army, and other federal technologies can be applied to improve firefighting devices and apparatus. A long-term innovative design initiative also being planned uses the FFTF, university automotive and human factors professionals, and government researchers and testers to redesign, virtual test, and prototype next-generation fire apparatus. It is anticipated that if funding were available, this area of investigation would target the design and performance of the next-generation apparatus for first responders to terrorist attacks. Attempts to secure funding for this effort are ongoing.



- ◆ **Wildland Fires.** Wildland fires and fires at the interface between wildlands and suburban communities continue to be a problem across the nation. The FFTF is working with the Army Aberdeen Test Center (ATC) in Maryland and its family of all-terrain firefighting vehicles. The ATC concept involves converting excess military equipment to very necessary and useful tools to address wildlands fire control needs. Currently, technologies

addressing the redesign of Smoke Jumpers and Rough Terrain Vehicles for fire suppression and clearing of forests are being considered and evaluated.

The FLC was invited by the Metropolitan Fire Chiefs to speak at its national conference in Hawaii and to participate in a demonstration of the firefighting helmet technology at the Hawaii Fire Department. The testing conducted with their firemen was very positive, with over 50 people attending the demonstration. The FLC Chair was also given an opportunity to speak about the FLC and the FFTF initiative.



Assistive Technology Initiative

The FLC continues to be committed to the assistive technologies initiative, which identifies technologies from federal laboratories that can be adapted to the special needs of the disabled community. The FLC uses its partnerships with relevant institutions and agencies to actively solicit technologies in specific needs areas and then links them to appropriate companies in the assistive technology community. Other assistive technology efforts include advocating legislative support for federal R&D in this area.

Naval Air Warfare Center (NAVAIR) Orlando has a Cooperative Research and Development Agreement (CRADA) with Duke University, as the agent of the Augmentative and Alternative Communication Rehabilitation Engineering Research Center (AAC-RERC), to test proof of concept for virtual reality applications of speech and motion recognition research for use by persons with communication disabilities. This CRADA has been supported by both the FLC and the Office of Naval Research (ONR) technology transfer program because it implements the directive of a White House memorandum dated July 25, 2000, calling on all federal agencies to focus a portion of their technology transfer toward development of assistive technologies. Based on ONR-funded research with application to fleet training in high noise situations (e.g., on the deck of an aircraft carrier), NAVAIR Orlando researchers worked with experts from Duke, Harvard and other member organizations of the RERC to develop software with the potential to improve the lives of many.

The FLC continues to expand its outreach to the assistive technology community by partnering with the Rehabilitation Engineering Research Center on Technology Transfer at the University of Buffalo, and the National Institute on Disability and Rehabilitation Research (NIDRR), an activity of the Department of Education. This partnership yielded the first survey of the assistive technology industry, which was conducted by the Department of Commerce (DOC). By the end of FY2002, the DOC was finalizing the results of the survey. Past initiatives included a wheeled mobility initiative to identify technologies for wheelchairs and scooters; a communication enhancement initiative to identify advanced technologies for users of augmentative and alternative communication devices in such areas as text-to-speech synthesis, display technologies, language processing, and wireless voice and data links; and a hearing enhancement initiative to commercialize technologies to improve the lives of people with hearing disabilities, including wireless technologies, “smart” microphones, “smart” polymers, and advanced anatomical measurement and modeling.

The FLC is also a member of the Interagency Committee on Disability Research and has helped to draft testimony and issue papers on the need for continued federal funding for assistive technology.

The FLC is also a member of the Interagency Committee on Disability Research

Other Events

The FLC was a sponsor of the State Science and Technology Institute’s (SSTI) fifth annual conference, which was held in Pittsburgh. Themed “Creating Opportunity: Tools for Building Tech-Based Economies,” the conference featured stimulating discussions, presentations, and workshops on tech-

based economic development. Conference highlights included such topics as “Extending Economic Growth to All Regions”; “Stopping the Brain Drain”; “Trends and New Developments in Tech-Based Economic Development”; and “University Partnerships for Economic Growth.”

In conjunction with the National Association of Seed and Venture Funds (NASVF), the FLC sponsored the inaugural World’s Best Technology Showcase (WBT), also in Pittsburgh. WBT is a national event showcasing seed and pre-seed stage technologies developed at the nation’s top universities, federal laboratories, and federally supported research and development institutions. The target audiences for these new and emerging technologies include seed and corporate investors, commercial licensing partners, and a variety of service providers and intermediaries that cater to technology-based startups or high growth/high-tech companies.

The WBT Showcase attracted over 190 participants, including 60 attendees representing 53 dedicated seed venture firms or licensing arms of large corporations. In all, WBT brought together 37 world-class technologies from across the U.S. (and one from Sweden). Most of the exhibitors were backed by \$1 million to \$3 million in federal R&D grants.



An important outcome of this event was the fact that 20 percent of the technologies presented have received over \$24 million in venture capital investment and/or additional R&D funding. Another event is planned for 2004.

The FLC participated in the Licensing Executives Society (LES) Environmental Committee meeting, which was held in Washington, D.C. At the national meeting of LES in Las Vegas, Nev., the FLC presented a brief overview of the consortium, its mission, and its resources.

The FLC Chair was a special guest at the celebration forum of the 32nd anniversary of the publication of *Future Shock*, Alvin and Heidi Toffler’s world-renowned book that explored the dynamic changes of global society and how people adapt to the future. Participants of the forum, which took place in Marina del Rey, Calif., included leaders from international businesses, government, academia, not-for-profit organizations, and other sectors of society. The forum focused on how the convergences of business, society, and new knowledge will create the future. Among the issues discussed were reforming measurements and metrics; securing the homelands; developing the future workforce; global economic issues; and balancing research and development, in which the FLC Chair was part of a group examining this issue in depth. The group produced three recommendations to address the issue: the focus of revolutionizing education should be on content and context, not introducing new instructional technology; develop deep coalitions between government, business, and academia in the area of research and development to enable new forms of technological and social advance; embark on a large-scale effort to achieve new breakthroughs in brain research and human cognitive processes and performance.

While at the forum, the FLC Chair addressed the question, “How will the FLC anticipate the deepening collaborations and conflicts possible among different sources of power?” She presented 12 points regarding how the FLC could accomplish this goal. These points included using ongoing efforts to establish a strong base from which to work; remembering the FLC’s mission of adding value to federal laboratories; defining and serving specialized audiences; honing the FLC’s focus; continued pursuits of collaborative efforts; staying abreast of changes; staying abreast of technology transfer policy; collaborating with allied groups for strength; consistently marketing FLC capabilities; positioning the FLC as a specialist in intellectual property, licensing, and patent law agreements; capitalizing on the strengths of the FLC; thinking outside the box; and the FLC extending itself when appropriate—and as directed by its agency members—with regard to international technology transfer.

Objective:

Reduce time, cost, and risk of research and development projects

Cooperative R&D between federal laboratories and the private sector is mutually beneficial because it reduces the time required to complete a project by accelerating technology applications; decreases costs by combining resources to produce a greater return on investment; and reduces risk by sharing the R&D responsibilities and investment. The FLC has a number of mechanisms that accomplish these goals, including:

- ◆ The Technology Locator offers “one-stop shopping” for federal laboratory technologies. Because the FLC represents all federal agencies, there is no need to make numerous phone calls—thus saving time and frustration.
- ◆ *FLC NewsLink* provides an outlet for marketing laboratory technologies and success stories, which assists laboratories in fulfilling their technology transfer goals.
- ◆ Collaborative research between academia and federal laboratories is made easier through FLC intervention, such as web site postings that both parties can use to find potential R&D partners.

These, and many other FLC benefits, result in quantifiable savings in time, cost, and risk for cooperative R&D projects, which assist several hundred organizations per year.

Objective:

Increase cost-sharing collaborations

As government budgets and resources shrink, federal laboratories and agencies must seek greater integration with industry and academia by establishing cost-sharing collaborations that enhance return on investment. The FLC network and technology transfer activities enable federal laboratories, academia, and private sector organizations to find technology transfer partners for such collaborations. In addition, the FLC Washington, DC Representative regularly participates in committee meetings and conferences sponsored by other organizations for the purpose of exploring possible cost-sharing collaborations. These organizations include (but are not limited to) the Technology Transfer Society, the Licensing Executives Society, the Institute of Electrical and Electronics Engineers USA, the American Association for the Advancement of Science, the National Association of Seed and Venture Funds, and the Council of Government Funded Research Universities.



FLC Awards Program

The FLC encourages participation in technology transfer and cost-sharing collaborations by presenting awards to individuals who have been successful in these areas. Known as the FLC Awards for Excellence in Technology Transfer, these awards are chosen by a panel of technology transfer experts from industry, academia, state and local governments, and federal laboratories. The awards are presented to federal laboratories whose recent achievements have “demonstrated uncommon creativity and initiative in the transfer of technology” that has resulted in significant benefits to industry, state and local governments, and/or the general public. Each region also recognizes individuals and organizations who have made significant contributions to regional technology transfer activities.

In FY2002, the FLC presented 26 Excellence in Technology Transfer Awards to 21 different laboratories from 6 agencies. In addition, the FLC honored three laboratory directors with Laboratory



Director of the Year Awards, which are presented to lab directors who have made the maximum contribution to the overall enhancement of technology transfer for economic development, and three Service Awards that recognized individuals involved in technology transfer activities who have provided exceptional support to the technology transfer process and furthered the mission of the FLC. Information about the award winners is posted on the FLC web site, published in *FLC NewsLink*, and recognized at the national meeting via an awards banquet and poster presentation.

Awards Program Statistics

Figures 9 and 10 provide breakdowns by federal agency of both award nominations and winners for the FY2002 awards program.

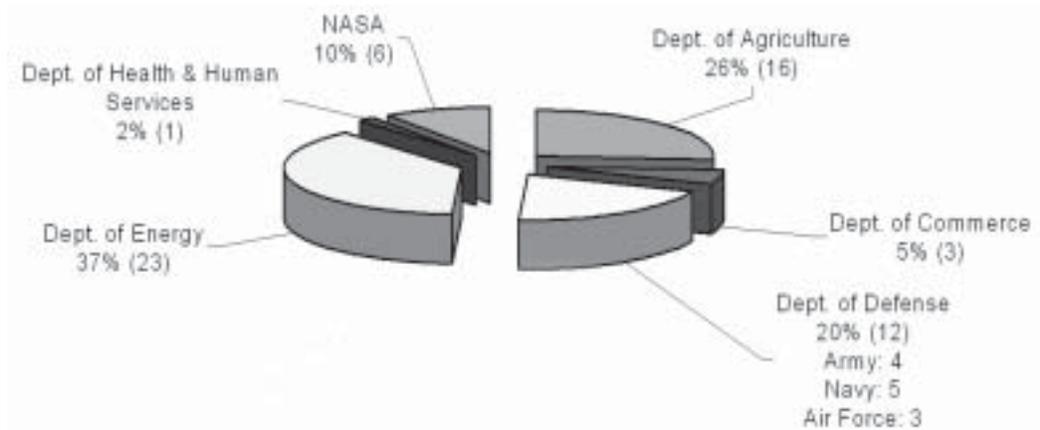


Figure 9. Nominations for Awards for Excellence in Technology Transfer

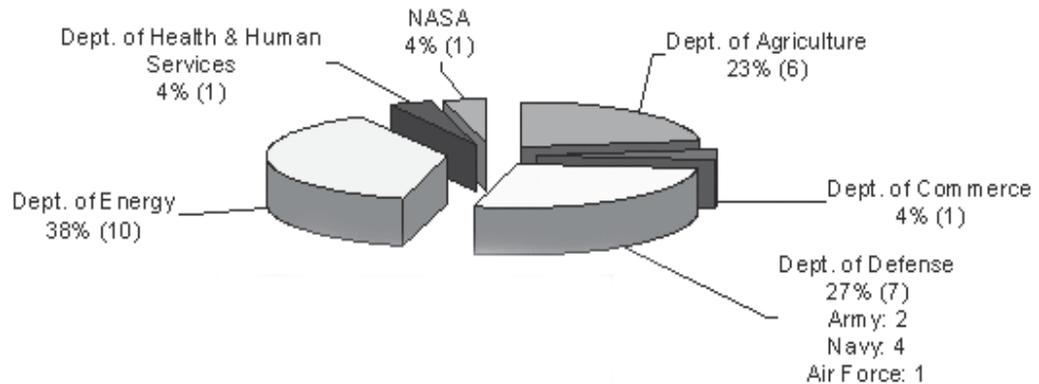


Figure 10. Winners of Awards for Excellence in Technology Transfer

Regional Awards

In FY 2002, three of the six regions also presented awards recognizing local technology transfer efforts:

- ◆ **Mid-Continent Region**—Presented six awards as part of its “Technology in the Service of Society,” which was a special recognition of notable technologies that served society. Other awards included six in the Outstanding Laboratory category, four in the Regional Partnership category, one Distinguished Service Award, one Outstanding Laboratory Representative Award, and five Appreciation Awards.

- ◆ **Southeast Region**—Presented four Awards for Excellence in Technology Transfer, one FLC Representative of the Year Award, and one award for “Project of the Year.”
- ◆ **Northeast Region**—Presented one Regional Coordinator’s Excellence Award, a special award recognizing the Regional Coordinator, and an award in appreciation for extended service to the Northeast Region.

Objective:

Increase use of federal technology by all participants

To increase the use of federal technologies, the FLC promoted greater awareness of federal laboratory capabilities and resources in order to accelerate technology applications to meet federal requirements and enhance private sector economic opportunities. Increased awareness is accomplished via targeted outreach efforts to trade associations and industrial consortia.

The activities used by the FLC to accomplish this objective included exhibitions at trade shows, highlighting federal lab capabilities on the web site, the Technology Locator, *FLC NewsLink*, and other marketing and public affairs outreach activities. These specific accomplishments were described previously in this report.



STRATEGIC GOAL

Improve and Innovate the Technology Transfer Process

Objective:

Characterize and analyze technology transfer policy, procedures, and activities

The FLC periodically collects, analyzes, and publishes information on federal agency and lab technology transfer practices to ensure that the best practices are adapted and used to assist the private sector and other public entities develop strategies for working with a federal laboratory or agency.

In FY2002, the FLC made effective use of *FLC NewsLink* and the FLC web site to focus on successful technology transfer methods, mechanisms, and success stories. The FLC continued to regularly develop and distribute publications that characterize and analyze successful technology transfer procedures and activities. Topics included managing the successful transfer of technology from federal facilities, how to develop and implement a technology evaluation program in federal laboratories, how to run an ORTA, patenting and licensing federal technologies, and how to develop and implement a CRADA. Finally, the Chair regularly made presentations to many science and technology organizations regarding the technology transfer policies of the FLC and its member agencies.

These agencies include:

- ◆ Central Intelligence Agency
- ◆ Department of Agriculture
- ◆ Department of Commerce
- ◆ Department of Defense
 - Air Force
 - Army
 - Navy
 - Defense Agency
- ◆ Department of Education
- ◆ Department of Energy
- ◆ Department of Health and Human Services
 - Centers for Disease Control
 - Food and Drug Administration
 - National Institutes of Health
- ◆ Department of Interior
- ◆ Department of Justice
- ◆ Department of Labor
- ◆ Department of Transportation
- ◆ Department of Veterans Affairs
- ◆ Environmental Protection Agency



- ◆ National Aeronautics and Space Agency
- ◆ National Science Foundation
- ◆ Smithsonian Institution
- ◆ Tennessee Valley Authority



The FLC is also a member of two interagency groups concerned with improving technology transfer—the Interagency Working Group on Technology Transfer and the Subcommittee on Technology of the Interagency Committee on Disability Research. In addition, the FLC monitored draft rules and policies proposed by the agencies and alerted the federal lab community about deadlines for submitting related comments; regularly attended hearings, summits, caucus roundtables, and other Washington, D.C. forums of interest to the federal lab community; and attended meetings of the President’s Council of Advisors in Science and Technology. The FLC also provided regular updates on new bills and policy documents via its newsletters and electronic communications network. With more than 5,000 associations in Washington, D.C., the FLC works to identify those that represent industry or market segments, with the goal of working with them to educate their member companies about the opportunities for assistance from the FLC and the potential for partnering with federal laboratories.

Objective:

Address barriers to technology transfer identified by external participants and others

Using input from the FLC network and private sector, the FLC identifies barriers to technology transfer activities and develops potential solutions. In FY2002, the FLC continued to use its marketing and public relations activities to create a more effective message for reaching industry and addressed some of its concerns. In FY2002 the FLC continued to present a “web-in-a-box” feature in its exhibit booth—a searchable snapshot of the FLC web site to clearly communicate information about the technologies available to industry. It also provided *FLC NewsLink* in electronic medium for a more timely and cost-effective distribution, as well as provided the hard-copy publication for current subscribers. In addition, the FLC continued to update and enhance its web site for ease of navigation and to provide updated technology and laboratory information.

Using input from the FLC network and private sector, the FLC identifies barriers to technology transfer activities and develops potential solutions

As part of its effort to identify barriers to technology transfer, the FLC had previously prepared and submitted an issue paper to the White House Office of Science and Technology Policy regarding the need to reform the federal innovation system and provide the necessary authority for mission-oriented federal laboratories to be able to work with the network of university-based Rehabilitation Engineering Research Centers, which develop assistive technologies for the elderly and persons with disabilities. In FY2001, this resulted in Congress’ adding a statutory mandate for the FLC to work with the Director of NIDRR to identify federal laboratory technologies that could have an impact on the assistive technology community.

The FLC also utilizes the services of the National Advisory Council (NAC), a committee comprised of a diverse group of individuals from industry, academia, and government who facilitate the use of technologies developed at federal laboratories by suggesting methods and practices that accelerate the transfer of knowledge. The NAC also provides the FLC Executive Board with user community views and suggestions related to the FLC’s operation, and assists in developing and implementing its Strategic Plan, as well as recommending changes and improvements to make the FLC more effective.

In FY2002, the NAC created three subcommittees to better assist the FLC in its numerous resource areas. The subcommittees include management, marketing, and communication. The NAC assisted with marketing the World's Best Technology Showcase, a vehicle that highlighted federally funded R&D efforts to the venture capital community.

Objective:

Provide fundamental and advanced education and training to enhance the technology transfer profession

FLC Technology Transfer Fundamentals Training

Training in the fundamentals of technology transfer is provided annually at the FLC national meeting. In FY2002, the FLC Technology Transfer Fundamentals Training program included the Technology Transfer Desk Reference, a revised and upgraded edition of the Fundamentals Training Handbook. The Desk Reference, which is designed as a training manual for the fundamentals training course as well as a stand-alone technology reference guide, provides a thorough overview of the basic elements of technology transfer. It also provides the background, concepts, and practical knowledge required to assist FLC Laboratory Representatives, ORTA personnel, and other technology transfer practitioners—whether in government or industry—to facilitate the transfer of federally funded technologies from the laboratory to the marketplace. The Desk Reference examines the following interrelated topics:

- ◆ **Technology Transfer Overview**—Provides information on the background and legislative history of technology transfer, discusses the tools of technology transfer (e.g., technology transfer organizations, programs, and mechanisms), examines the technology transfer process, and provides practical ideas on how to assess a laboratory's technology resources.
- ◆ **The Role of the Federal Laboratory Consortium in Technology Transfer**—Examines the mission, goals, and objectives of the FLC; outlines the history of the Consortium; describes its organization and structure; and details the technology transfer activities and services provided by the FLC.
- ◆ **Cooperative Research and Development Agreement (CRADA)**—Examines the legislative authority, purpose, characteristics, and intellectual property issues relating to CRADAs, and discusses procedures for developing CRADAs. A model CRADA is also provided.
- ◆ **Intellectual Property Issues**—Focuses on the importance of intellectual property to technology transfer, protecting intellectual property, patenting and licensing an invention, and royalties.
- ◆ **Technology Transfer Marketing**—Provides practical information in areas such as establishing a technology transfer marketing plan, demonstrating the value of technology, marketing technology, and negotiating with a potential partner.

The FLC Technology Transfer Fundamentals Training course... combines traditional classroom style training, the real-life experiences of presenters, and practical insights into the "nuts and bolts" of technology transfer.



- ◆ **Appendices**—A number of appendices provide an overview of technology transfer legislation and related executive orders, major legislative themes in federal technology transfer, and articles discussing detailed legal issues regarding intellectual property and technology transfer.

In FY2002, the FLC technology transfer fundamentals training program consisted of the following courses:

- ◆ **Building a Foundation for ORTA and Legal Staff—Fundamentals Training** provided newcomers with instruction about laws that enable formal technology transfer at federal laboratories; what Congress intended for the agencies and their laboratories to do in carrying out this mission; and the laboratories' responsibilities in identifying, protecting, and managing intellectual property.
- ◆ **The Anatomy of CRADAs and License Agreements: An In-depth Review of the Most Common Technology Transfer Instruments (presented in two parts)**
 - *CRADA Review.* Insights provided by experienced professionals regarding key CRADA clauses, including an analysis of why industry and some laboratories consider certain clauses “barriers” to technology transfer. Also discussed were what constitutes success under a CRADA and how the agreements can be managed to achieve that success.
 - *License Review.* A discussion led by licensing professionals focused on clauses that often pose problems for licensees and examined “rule-of-thumb” tactics. Also discussed were what constitutes success and the steps required to create a license relationship that leads to success.

In FY2002, 34 students attended FLC technology transfer fundamentals training.

Advanced Training

The FLC also provides advanced training courses in other aspects of technology transfer at its national meetings. In FY2002, the FLC offered **Best Practices and Lessons Learned from the Professionals—Advanced Training**. This seminar, led by professionals who learned technology transfer by actually negotiating, closing the deals and managing the results, examined how various agencies and laboratories have implemented the technology transfer laws. They presented their experiences with impediments to effective technology transfer, how they adapted to meet the realities of what actually works, and what they viewed as success in order to assist other technology transfer practitioners who face similar challenges.

Attendance at the FLC advanced training course in FY 2002 was 60.

Regional Training

In FY2002, the various regions provided in-depth training programs at their regional meetings. This training included:

- ◆ **Far West Region**—Intellectual Property; Marketing Techniques; Homeland Security; Successful Laboratory Programs—85 attendees.
- ◆ **Mid-Continent Region**—Boot Up Your Marketing Skills; Marketing at Federal Laboratories: What Works, What Doesn't, and With What Success; Marketing Using the Internet; Electronic Marketing; Ties to the Outside World; Online Training Opportunities; Finding

Market Opportunities and Licensees; Locating Potential Customers and Licensing Deals—60 attendees.

- ◆ **Southeast Region**—Technology Commercialization via New Business Development; Edison Program for Technology Patent Tracking; Negotiating with Venture Capital and Business Development Groups; Technology Commercialization; Venture Capital Perspectives on Technology Acquisition and Marketing Technologies to VC Firms; Technology Marketing Tips.
- ◆ **Northeast Region**—How to Develop an International T2 Training Program for Bench-Level Scientists.

Other Training

The Washington, DC Representative provided an evening of training as part of a 7- to 10-week training course in FY2002. Attended by 80 students, the training focused on the evolution of technology transfer legislation and the role of the FLC in technology transfer.

Entrepreneurial Technology Apprenticeship Program

In FY2002, the FLC continued to partner with the National Technology Transfer Center, the Department of Commerce Minority Business Development Agency, and other federal agencies and private businesses to support the Entrepreneurial Technology Apprenticeship Program (ETAP). This one-year training and internship program provides a foundation for undergraduate and graduate students from Historically Black Colleges and Universities (HBCUs) and minority institutions who are interested in pursuing careers in technology management, technology transfer, and technology commercialization. The program has placed students in technology management/commercialization, manufacturing assistance, and industrial research and development partnerships through a structured two-month academic/training program and a nine-month hands-on training experience at a cooperating apprenticeship site. Of the five HBCU students selected in FY2001, three presented their work at the FY2002 national meeting.



Objective:

Provide federal agencies with an analysis of key performance measurement elements and assessment options

The FLC collects relevant data regarding the operations and impact of federal technology transfer activities and provides these data to the laboratories, agencies, and Congress as a performance baseline against which technology transfer performance can be measured. The FLC has been reporting to Congress since FY1987 and has implemented a formal performance evaluation process. The goals of this process are to improve program performance within the FLC by keeping member agencies informed of its performance and to keep the Executive Branch and Congress apprised of the FLC's achievements.

Beginning in FY1999, the FLC analyzed its key performance elements to identify its strategic goals and performance objectives, established annual outcome and output performance targets, developed a quantitative and qualitative measurement capability, and developed procedures to analyze its quarterly activity reports to measure progress against established goals. Specific activities included:

- ◆ Development of the FLC Strategic Plan
- ◆ Documentation and analysis of technology transfer performance data
- ◆ Preparation of the FLC annual reports.

Continuing with this process in FY2002, the FLC leadership met with representatives of member agencies to coordinate the FLC's technology transfer activities with those of the parent agencies and their laboratories. The FLC also coordinated with numerous organizations that addressed the issues of performance measurement and metrics for the science community—including the Research Roundtable, the National Academy of Sciences, and the National Academy for Public Administration. In addition, newsletter articles and e-mail updates highlighted the projects and findings of these groups for the federal laboratory community.



AUDIT STATEMENT

The following four pages contain the independent audit prepared by
Reinhart & Davis, P.C. of the Federal Laboratory Consortium for
Technology Transfer.

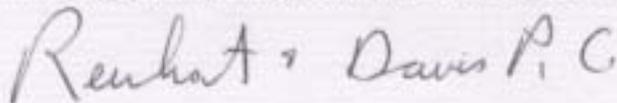
INDEPENDENT AUDITOR'S REPORT

Ms. Ann Rydalch, Chair
Federal Laboratory Consortium for Technology Transfer
Washington, D.C. Office
1235 Jefferson Davis Highway Suite 303
Arlington, Virginia 22202

We have audited the accompanying Schedule Of Revenues And Disbursements of the Federal Laboratory Consortium for Technology Transfer for the fiscal year ended September 30, 2002. This schedule is the responsibility of the Consortium's management. Our responsibility is to express an opinion on the schedule based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United State of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the schedules of revenues and expenses are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the schedule of revenues and expenses. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the schedule of revenues and expenses. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the Federal Laboratory Consortium for Technology Transfer Schedule Of Revenues And Disbursements for the fiscal year ended September 30, 2002 presents fairly, in all material respects, funds received and funds disbursed in accordance with accounting principles generally accepted in the United State of America.



Reinhart & Davis P.C.
Mitchellville MD 20721

November 13, 2003

**Federal Laboratory Consortium
for Technology Transfer**

Financial Statement

**Schedule of Revenues and Disbursements
Fiscal year ending September 30, 2002**

Federal Laboratory Consortium for Technology Transfer

Financial Statement Schedule of Revenues and Disbursements for the fiscal year ending September 30, 2002

Revenue Received from Supporting Agencies' Budgets

For Fiscal year 1998	\$	8,703
For Fiscal year 1999		13,628
For Fiscal year 2001		1,624,293
For Fiscal year 2002		1,855,486
Total Financing		<u>\$3,502,110</u>

Disbursements

Contract and Program Support:		
Prior year		(129,075)
Current Year		(1,602,976)
NIST Administrative Charge		(92,791)
Travel, Transportation, & Relocation		(20)
Total Disbursements		<u>(1,824,862)</u>
Revenue less Disbursements		<u>1,677,248</u>

Unliquidated Obligations

Prior year		(26,402)
Current Year		(469,271)
Total Unliquidated Obligations		<u>(495,673)</u>
Unobligated Balance		<u>\$1,181,575</u>

NOTES TO FINANCIAL STATEMENT

November 13, 2003 Federal Laboratory Consortium for Technology Transfer

In 1974 a group of Federal laboratories met and established the Federal Laboratory Consortium for Technology Transfer (FLC) for the dissemination of technical information developed by U.S. Government Agencies and employees. Congress enacted the Federal Technology Transfer Act of 1986 in an amendment to the Stevenson-Wydler Technology Innovation Act of 1980, thereby providing the FLC a statutory charter, with 11 mandates for the FLC, and a requirement to submit an annual report with an annual independent audit of the FLC's financial statements. The US Congress has determined that technology and industrial innovation are central to the economic, environmental and social well being of citizens of the United States.

The FLC develops and administers techniques, training courses and materials concerning technology transfer to increase the awareness of Federal laboratory employees regarding the commercial potential of laboratory technology and innovation.

The FLC is to furnish advice and assist in requests by Federal agencies and laboratories for use in their technology transfer programs. The FLC receives its funding from each Federal agency that has a budget for research and development. Each such agency is required to transfer .008% of its budget to the FLC to enable the FLC to carry out its activities in accordance with its statutory mandates.

The governing body of the FLC is the Executive Board, whose members are elected or appointed. Membership in the Federal Laboratory Consortium for Technology Transfer consists of one or more representatives from each Federal laboratory having 200 or more full-time equivalent scientific, engineering and related technical positions and members from smaller labs who choose to participate.

Revenues reflect funds received or required to be paid to FLC under its charter. While congress mandated that FLC receive .008% of the budget of every Federal agency having a budget for research and development, FLC has limited enforcement capability and generally must accept whatever the Federal agency disburses to FLC.

Disbursements reflect funds actually disbursed or committed to be disbursed during fiscal year 2002.



Benefits Package



T e c h n o l o g y T r a n s f e r

A Key to Technological Innovation

Sustained economic growth is a major goal of the U.S. government, and it is clear the engines of growth in the 21st century will be technological and scientific innovation and creativity.

Much of this innovation and creativity takes place within the federal laboratory system—which comprises 700+ federal labs, 100,000+ scientists and engineers working in nearly every technical discipline, and a combined R&D budget of more than \$70 billion. But while many technological innovations are born in federal labs, the subsequent commercialization that benefits the public depends primarily on industry, academia, and state and local governments. For the nation to maintain its competitive edge, partnerships that transfer technology from federal labs to the U.S. marketplace are crucial.

This synergistic transfer of technology from labs to industry, academia, and state and local governments is known as *technology transfer*. Realizing that it is in the national interest to foster such partnerships, Congress enacted a series of legislation that promotes technology transfer and provides mechanisms and incentives to facilitate the process. The technological and industrial innovations spurred by this legislation have provided the nation, its economy, and its people with the comprehensive benefits that Congress originally envisioned 20 years ago, including:

- ◆ Improved standard of living
- ◆ Increased productivity
- ◆ Creation of new industries
- ◆ Creation of new jobs
- ◆ Improved public service
- ◆ Enhanced competitiveness of U.S. products in world markets.

The Federal Laboratory Consortium for Technology Transfer

Recognizing that “it is in the continuing interest of the federal government to ensure the full use of the result of the nation’s federal investment in research and development,” in 1986 Congress created a focal point for the nation’s technology transfer efforts by establishing the **Federal Laboratory Consortium for Technology Transfer (FLC)** through the Federal Technology Transfer Act (P.L. 99-502). The FLC’s mission is to accomplish the rapid integration of federal R&D resources into the mainstream of the nation’s economy using its network of more than 700 research labs and centers from 17 federal departments and agencies.



Congress

Sustained economic growth is a perennial concern for members of Congress because it directly affects the economic and social well-being of your constituents. As the global marketplace becomes increasingly competitive, it is clear that technological and scientific innovation will continue to drive economic development.

The federal laboratory system leads the way in science and technology—unearthing tomorrow's technological innovations today. The process of transferring cutting-edge scientific breakthroughs from federal labs to U.S. industry is a vital part of ensuring that our nation maintains its competitive edge. The FLC plays a key role in facilitating this process—resulting in a host of benefits for your constituents and the nation.

The FLC and its technology transfer efforts benefit you and your constituents by:

- ◆ **Strengthening the U.S. Industrial Base**

When the FLC helps a U.S. company reduce its R&D costs, solve a technical problem, or improve productivity by helping them partner with a federal lab, the U.S. industrial base as a whole is strengthened—resulting in a stronger and more competitive nation.

- ◆ **Creating New Jobs and Industries**

Spinoffs—new businesses or products that evolve from federal R&D—are a common result of the technology transfer partnerships the FLC helps to create. This means new jobs for your constituents—and sometimes it can mean an entirely new industry or market.

- ◆ **Leveraging the Federal Investment in Technology**

Each year, the federal government invests \$25 billion in R&D. With technology transfer and the FLC's efforts, much of this investment is leveraged—giving U.S. industry the competitive edge and technologies it needs to create better products.

- ◆ **Improving the Lives of Your Constituents**

Countless products have either evolved from federal R&D or been substantially improved. The FLC can point to hundreds of success stories that led to improved consumer products, increased public safety, a cleaner environment, and more accurate medical tests. Virtually every aspect of our lives is touched by federal R&D—from the diapers our children wear to the instruments that screen for breast cancer.

- ◆ **Fulfilling the Goals and Objectives of Federal Technology Transfer Legislation**

The FLC plays a major role in ensuring that the spirit, intent, and mandates of federal technology transfer legislation are fulfilled. As a constant and consistent champion of federal technology transfer, the FLC ensures that Congress' vision of a fully leveraged and vital federal laboratory system does not go unmet.



I n d u s t r y

The global marketplace has never been more challenging. U.S. industry is facing more competition than ever before—and the need to speed time to market and cut costs has never been greater. To help U.S. companies increase their competitive edge, Congress mandates that—whenever possible—the R&D being conducted in federal labs should be transferred to the private sector. This process—known as technology transfer—is one of our nation’s best kept secrets. However, thanks to the FLC, more and more companies like yours are discovering the power of working with federal labs.

Recognizing the flexibility and confidentiality requirements of industry, federal technology transfer has changed drastically in the last 10 years—becoming more focused on industry’s concerns and needs. As a result, more technology transfer mechanisms have been created—making it easier than ever to enter into partnerships with federal research facilities.

The FLC and its technology transfer efforts benefit U.S. industry by:

- ◆ **Leveraging R&D Costs**
Building on R&D already accomplished by a federal laboratory is one of the most effective ways to reduce your R&D costs. And with technological innovations that have applications in virtually every industry, the federal lab system offers almost limitless opportunities to build on your R&D efforts.
- ◆ **Reducing Product Development Time and Costs**
By using state-of-the-art federal facilities to conduct product development and testing, you can dramatically reduce your product development cycle. Another option is to obtain an exclusive license to market a federally developed technology—a process that provides a much needed edge for smaller companies trying to enter the marketplace.
- ◆ **Supplementing Personnel and Corporate Know-How**
Technology transfer is much more than licensing a patent or conducting cooperative R&D. Many federal labs offer opportunities for personnel exchanges—an excellent way to supplement your existing staff. In addition, highly focused technical assistance can be provided to solve a specific problem—allowing your company to move faster than if only in-house resources were used.
- ◆ **Serving as an Easy-to-use Entry Point to the Federal Laboratory System**
Although your company may already have established relationships with one or more federal labs, expanding this network can result in tremendous benefits. The FLC offers a variety of accessible entry points into the federal R&D system—making it easier to find new partners.
- ◆ **Offering One-stop Shopping for Federal Laboratory Technologies**
Because the FLC represents all federal agencies, you truly get “one-stop shopping.” There is no need to make numerous telephone calls; one call to the FLC will suffice—saving you time and frustration.



Academia

Cutting-edge research is one of the recognized purviews of America's colleges and universities, but budget constraints and limited resources present significant challenges. The close and collaborative relationship between academia and federal research labs has traditionally been a way to overcome these obstacles—allowing both parties to leverage their R&D efforts and accomplish mutual goals. In addition, federal labs offer students exciting opportunities unavailable elsewhere—from apprenticeships to grants for innovative research projects. The connection between academia and federal labs has never been stronger—and the FLC is dedicated to strengthening this important bond.

The FLC and its technology transfer efforts benefit academia by:

- ◆ **Offering Opportunities for Joint R&D Ventures**

Collaborative research between academia and federal labs has often produced breakthrough innovations. The FLC's Technology Locator, web site, and newsletter are valuable tools that academia can use to find potential R&D partners within the federal lab system.

- ◆ **Involving the Next Generation of Researchers—Students—in Innovative Technology Projects**

Federal agencies and labs offer a wide variety of grants and hands-on programs such as the Entrepreneurial Technology Apprenticeship Program (ETAP) that offer students the chance to get involved in innovative technology projects—opportunities that help prepare the next generation of researchers for the challenges and opportunities they will face.

- ◆ **Providing Opportunities for Intellectual Collaboration with Leading Government Scientists and Researchers**

Technology transfer offers academic researchers the opportunity to collaborate with leading government scientists on cutting-edge R&D topics. In addition, these types of collaborations often involve using unique government facilities unavailable elsewhere.

- ◆ **Leveraging R&D Resources**

Federal labs offer many services and technological innovations that can leverage the resources of academia—resulting in lower costs, increased productivity, and more R&D opportunities.

- ◆ **Offering One-stop Shopping for Federal R&D Opportunities**

Because the FLC represents all federal agencies, you truly get “one-stop shopping.” There is no need to make numerous telephone calls to find the lab or facility you are seeking; one call to the FLC will suffice—saving time and frustration.



State and Local Government

The federal government shares many of the challenges that face state and local governments. Because of these mutual concerns, federal research labs often produce scientific and technological developments that are potentially useful to state and local governments—from methods for cleaning up environmental hazards, to innovative materials for use on roadways, to technologies that enhance public safety.

The FLC is dedicated to ensuring the availability of technological developments of interest to state and local governments. A variety of technology transfer mechanisms are possible—ranging from direct transfer, to technical assistance from federal scientists or engineers, to technology demonstration or cooperative R&D projects. Serving state and local governments is a primary concern for the FLC and is frequently mentioned in the FLC’s statutory mandates. In addition, the FLC established a separate committee dedicated to working with state and local governments.

The FLC and its technology transfer efforts benefit state and local governments by:

- ◆ **Expanding and Extending Resources**
Federal labs offer many services and technological innovations that can leverage the resources of state and local governments—resulting in improved services, reduced operating costs, and increased productivity.
- ◆ **Supporting Economic Development Programs**
The FLC and its network of labs offer significant support to state and local economic development programs—from contributing to state venture programs, to sharing technical assistance requests, to providing guidance on establishing workable technology transfer programs.
- ◆ **Helping to Solve Problems**
Many federal labs work closely with the governments in their communities to solve problems of mutual concern. Some problem-solving collaborations have focused on locating underground utilities, increasing school security, and solving wastewater treatment problems.
- ◆ **Serving as an Easy-to-use Entry Point to the Federal Laboratory System**
If a federal lab in a particular region cannot meet the needs of the local community, the FLC offers an easy way to access the federal R&D network and identify a lab that can serve as a collaborative partner.
- ◆ **Assisting with the Development of Technology Transfer Legislation**
The FLC’s long history and association with technology transfer legislation means it has valuable information on what works and what doesn’t—important information to state and local governments developing tech transfer legislation.

FEDERAL LABORATORY CONSORTIUM
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