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T<sup>2</sup> F A C T

*Technology transfer, the transfer of research results from universities to the commercial marketplace for the public benefit, is closely linked to fundamental research activities in universities. Although U.S. universities were moving science from the laboratory to industrial commercialization as early as the 1920s, academic transfer as a formal concept is said to have originated in a report written by Vannevar Bush for the president in 1945, entitled "Science, The Endless Frontier."*

-Council on Governmental Relations



T<sup>2</sup> E V E N T S

- Western Conference and Exposition 2005  
San Diego, Calif.  
Feb. 1-3, 2005
- 
- AUTM Annual Meeting  
Phoenix, Ariz.  
Feb 3-5, 2005
- 
- National Design Engineering Show  
Chicago, Ill.  
March 7-10, 2005
- 
- World's Best Technologies 2005  
Arlington, Texas  
March 28-30, 2005
- 
- Mini-Conference on Human Factors in Complex  
Atlantic City, N.J.  
April 28-29, 2005
- 
- FLC National Meeting  
*Mission Driven Partnerships*  
Orlando, Fla.  
May 1-6, 2005
- 
- NSTI Nanotech Conference and Trade Show  
Anaheim, Calif.  
May 8-12, 2005
- 
- Bio 2005  
Philadelphia, Pa.  
June 19-22, 2005

## Bayh-Dole T<sup>2</sup> Act Turns 25 Y-12 for Crisis Management

From the Council on Governmental Relations

Technology transfer—the transfer of research results from universities to the commercial marketplace for the public benefit—is closely linked to fundamental research activities in universities. Although a handful of U.S. universities were moving science from the laboratory to industrial commercialization as early as the 1920s, academic technology transfer as a formal concept is said to have originated in a report entitled “Science - The Endless Frontier” that Vannevar Bush wrote for the president in 1945.

At that time, the success of the Manhattan Project had demonstrated the importance of university research to the national defense. Vannevar Bush, however, also recognized the value of university research as a vehicle for enhancing the economy by increasing the flow of knowledge to industry through support of basic science. His report became instrumental in the government’s providing a substantial and continuing increase in research funding.

It stimulated the formation of the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Office of Naval Research (ONR).

Due to the success of these and other agencies, the funding of basic research by the federal government’s is now considered to be vital to the national interest.

In the 1960s and 1970s, there was much study and debate surrounding federal patent policies. A major concern was the federal government’s lack of success promoting the adoption of new technologies by industry.

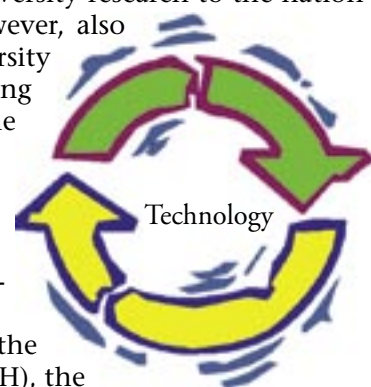
There was no government-wide policy regarding ownership of inventions made by government contractors and grantees under federal funding. Inconsistencies in policies and practices among the various funding agencies resulted in a very limited flow of government-funded inventions to the private sector.

In 1980, the federal government held title to approximately 28,000 patents. Fewer than 5% of these were licensed to industry for development of commercial products.

This problem was due, in part, to restrictions imposed on the licensing of new technologies and reluctance on the part of the agencies to permit ownership of inventions to vest in universities and other grantees.

The government would not relinquish ownership of federally funded inventions to the inventing organization except in rare cases after petitions had moved through a lengthy and difficult waiver process.

Instead, the government retained title and made these inventions available through non-exclusive licenses to anyone who wanted to practice them. As a result, companies did not



Technology

See Bayh-Dole Turns 25, page 4

by David Baumgardner, Y-12 National Security Complex

Wide-ranging emergency response personnel confronting homeland security challenges, natural disasters, accidents, and other calamities are finding a reliable ally in RAMSAFE software from RAMSAFE Technologies in Oak Ridge, Tenn.

From the aftermath of the 2004 Florida hurricanes to the Utah Winter Olympics to the Atlanta Millennium Super Bowl, the software has provided crucial logistical assistance to emergency preparedness decision-makers in readily understandable visual formats.

RAMSAFE, a technology developed by researchers at the U.S. Department of Energy’s (DOE) Y-12 National Security Complex, stores and organizes massive amounts of critical data about a location or special event before an incident happens. During crises, RAMSAFE users are armed with total on-scene situational awareness. The software provides detailed forecasts of casualties, necessary command-level responses, specific time-phased resource requirements, and online access to personnel and resource shortfall information.

RAMSAFE’s predictive models also change as a situation unfolds. According to one Medical Disaster Conference report, RAMSAFE could reduce human and economic loss by as much as 50% in a biohazard event.

RAMSAFE features rugged portable laptops that are connected to a secure web portal communication system and loaded with custom-built databases that include iPIX 360°-by-360°

photographs (enabling full-view remote inspections of building interiors). Satellite photos, blueprints, maps, full-functional geographic information systems, real-time video, security checklists, and evacuation routes also are provided.

With a special emphasis on bioterrorism, the software includes U.S. Army Soldier and Biological Chemical Command (SBCCOM)

See Y-12 Crisis Management, page 4



A homeowner surveys the damage done by hurricane Jeanne in September 2004.



David Leachman

RAMSAFE, developed from technology based on research conducted at the Y-12 National Security Complex, will emergency response professionals when reacting to natural disasters, homeland security threats, and accidents.

## DC on T<sup>2</sup>

by Dave Appler, FLC Washington, DC Representative



As I write this article, I am reminded that we learn from history, make history, and try and plan for the future so we don’t make bad history. In 2004 the FLC was 35 years young. In 2005 we will celebrate the 25th anniversary of the Stevenson-Wydler Technology Innovation Act of 1980 and the Bayh-Dole Act of 1980. Some people might say—so what, that’s ancient history in a high tech world.

I would say the reasons the FLC was started and this legislation was passed are that the people in the federal government, along with our technology transfer partners in academia and industry, all wanted taxpayers’ investment in R&D to pay off. It is important to invest in technology to advance scientific knowledge and help the government obtain its objectives.

See DC on T<sup>2</sup>, page 5

## U.S. Army Proving Ground T<sup>2</sup> Saves Energy

From the Office of Technology Transfer U.S. Army Proving Ground

The U.S. Army Yuma Proving Ground (USAYPG) is home to approximately 1700 military and civilian employees, and hosts more than 10,000 visitors each year.

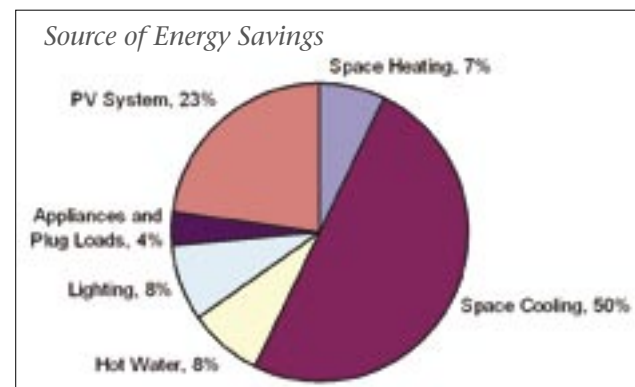
The base housing for these employees, which dates back to the early 1950s, is extremely energy inefficient.

To solve this problem, the manager of the USAYPG Technology Transfer Program recommended to the post commander and officials of USAYPG that a demo model building be built that would apply and use technology to reduce energy costs.

The model would then be used to demonstrate to the Department of the Army and other agencies how family housing units should be constructed with the goal of better utilizing funds to replace/upgrade current family housing units.

The design required energy efficiency, more effective materials reuse, improved water conservation techniques, and a design for sustainability. This project, with its emphasis on conservation and education, became a key example of environ-

See U.S. Army Saves Energy, page 6





# Fed Labs Flash | Technology Transfer Notes

## PNNL, Intellifit Win R&D Choice Award



A holographic imaging system developed by the Department of Energy's Pacific Northwest National Laboratory (PNNL) and Philadelphia-based Intellifit was chosen by *R&D Magazine* editors as the "Most Promising New Technology of 2004," out of a field of 100 top innovations worldwide.

The team won the surprise honor for the Intellifit System at the R&D 100 award ceremony in Chicago in October. The Intellifit System bounces harmless radio waves off a fully clothed person, and in seconds it generates up to 80 accurate body measurements that are used to identify best-fitting sizes and apparel brands for an individual.

Manufacturers also can use the system to develop better-fitting, off-the-rack clothing and to help retailers buy, stock, and sell the most appropriate apparel for their customers.

Intellifit, which was featured on the Jane Pauley Show in September, has begun installing the systems nationwide, most recently at a Macy's in Philadelphia. At PNNL, contact Susan Bauer at 509-375-3688. At Intellifit, contact Ed Gribbin at 215-242-5911.

## SRNL Floats Plasma Screen

Although manufacturers recommend against mounting large plasma screen displays in environments where shock and vibration occur, certain mobile applications can benefit from the use of flat panel displays.

To enable the use of a 42-inch plasma display screen weighing about 60 pounds in a mobile surveillance laboratory, Savannah River National Laboratory (SRNL) engineers created a unique, patent-pending floating mount. Known as the TRAC van, this specialized ve-

hicle performs a wide variety of monitoring and detection activities in response to catastrophic events. These activities are often conducted while driving over rough terrain or traveling at highway speeds of 65-70 mph.

Development of the floating mount system came about, in large part, due to a lack of available commercial products that would adequately perform this function.

The SRNL floating mount working prototype has now been in use for two years, providing stable, on-the-scene, interference-free video, computer graphics, and scientific modeling displays.

The frame is designed to allow the plasma display to "float" in three dimensions. This floating action eliminates vibration and dampens shock to the display in the event of external impacts such as potholes or rough terrain, and prevents damage to the gas-filled glass platen and other sensitive electronics of the screen.

Flat panel display technology is gaining popularity, and this new mounting system enables the use of such display screens within mobile medical labs, military vehicles, mobile command centers, and environmental laboratories as well as recreational vehicles.



Using the plasma screen mounting technology, SRNL scientists analyze modeling information on a large screen plasma display housed in their mobile environmental monitoring laboratory.

## New Director of NIH Behavior

by Neil MacDonald,  
*Federal Technology Report*

National Institutes of Health (NIH) Director Dr. Elias Zerhouni announced December 9 that David B. Abrams has been selected as Associate Director for Behavioral & Social Sciences Research and

Director of the Office of Behavioral & Social Sciences Research (OBSSR).

He is expected to begin his appointment in January 2005. "I'm extremely pleased that a scientist and researcher of Abrams' caliber is joining NIH at this time," said Dr. Zerhouni. "His outstanding expertise and vision will provide the leadership we need to continue to strengthen our efforts in behavioral and social sciences research."

Currently, Abrams is on the faculty of Brown University, where he serves as Director of Behavioral Medicine Research.

He also holds joint appointments as professor, Department of Psychiatry & Human Behavior, Brown University School of Medicine; Director, Miriam Hospital Centers for Behavioral & Preventive Medicine; and Founding Director, Brown University Centers for Behavioral & Preventive Medicine. He received his M.S. and Ph.D. in clinical psychology from Rutgers University, and completed his internship and postdoctoral training at Brown.

He has held leadership positions in national and international professional societies, including serving as president of the Society of Behavioral Medicine.

## NASA's Affairs of the Heart

With NASA looking toward extending missions to further explore space, the NASA Glenn Research Center (GRC) has partnered with MetroHealth Medical Center in Cleveland to develop a method of measuring whether astronauts are more susceptible to serious cardiac episodes the longer they are in space.

"NASA is responsible for the health and safety of astronauts in space," said David York, chief engineer for GRC's Flight Software Branch. "We are extremely pleased to be working with Dr. David Rosenbaum, director of MetroHealth's Heart & Vascular Center and Division of Cardiology. His internationally renowned expertise in the recognition and prevention of cardiovascular disease is an excellent match for this research."

## ARS Insect Research Lab Ticks Off Deer

by Tara Weaver-Missick, USDA Agricultural Research Service

Scientists led by Research Entomologist J. Mat Pound of the Livestock Insects Research Unit, Knipling-Bushland U.S. Livestock Insect Research Laboratory of the Agricultural Research Service in Kerrville, Texas, developed and patented a self-treatment system for controlling ticks on white-tailed deer.

The device was studied for five years to see if it would control ticks plaguing white-tailed deer in the Northeast. The system is a simple, feeder-like bait station that is readily accepted and used by deer.

It has proven effective in controlling parasitic ticks that feed on white-tailed deer, including lone star ticks, which cause ehrlichiosis (a bacterial disease), and blacklegged ticks, which transmit the bacterial agent, *Borrelia burgdorferi*, that causes Lyme disease in humans.

The station consists of a bin filled with whole-kernel corn. Paint rollers on the four corners of the bin are loaded with a special chemical formulation, which was registered with the U.S. Environmental Protection Agency for exclusive application to deer using this system.

As a deer feeds on the corn in the bin, the animal's head and neck rub against the rollers—offering sufficient coverage to protect the entire animal.

C.R. Daniels, Inc. of Ellicott, Md., and the American



"The cost of diagnosing, treating, preventing and controlling Lyme disease in the U.S. exceeds \$2.5 billion."

Lyme Disease Foundation, Inc. of Somers, N.Y., have licensed the technology.

ARS researchers worked extensively with C.R. Daniels to develop a polyethylene version of the device, which is currently available for sale. Since its official debut at a large convention in Las Vegas, Nev., in February of this year, approximately 200 units have been sold for use in the United States.

Lyme disease is the leading cause of U.S. vector-borne illness. Nearly 250,000 cases of Lyme disease have been reported to the Centers for Disease Control from 1980 until 2004.

The cost of diagnosing, treating, preventing and controlling Lyme disease in the U.S. exceeds \$2.5 billion.

ARS scientists estimate that properly using the four-poster technology can minimize or even eliminate tick-borne disease.

For example, in a study at the Goddard Space Flight Center in Maryland, 98% of nymphal ticks were eliminated after three years of treatment.

Thus, this safe, low-cost technology reduces the chance of contracting a tick-borne disease at Goddard to near zero.

More info: Bryan Kaphammer, 970-492-7028, bryan.kaphammer@ars.usda.gov or Tara Weaver-Missick, 301-504-6965, twm@ars.usda.gov

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# Tech Watch | Laboratory Techs Ready for Transfer

## TVA Destroys Contaminants

Tennessee Valley Authority (TVA) researchers have developed and patented a new, novel bioreactor technology (B-Tec) that simultaneously destroys water and airborne contaminants and odors in one simple step – substantially reducing the cost, complexity, and footprint normally associated with separate water and air treatments.

As contaminated water and air pass through the packing of the B-Tec bioreactor, microbes consume target contaminants or odors, converting them into small amounts of water, carbon dioxide, and simple salts. B-Tec bioreactors can be used in a variety of applications ranging from site restoration to industrial compliance. Contaminants destroyed include a wide variety of volatile organic compounds (VOCs), such as BTEX, MTBE, methylene chloride and TCE, as well as ammonia, hydrogen sulfide, and odors in wastewater treatment.

The B-Tec process has distinct advantages over existing conventional treatment technologies. For example, air stripping and biological treatments in open aerated basins or trickling filters allow volatilization and release of contaminants/odors to the atmosphere. In some cases, these contaminated off-gases/odors are treated with processes such as carbon adsorption, scrubbing, biofiltration, or incineration.

Carbon adsorption and scrubbing merely transfer the contaminants to other media; removal of the contaminants from these media and destruction or safe disposal of the contaminants are still necessary. Expensive incineration can generate and release toxic by-products to the atmosphere.

These additional process steps increase the complexity, footprint, and costs for total treatment. But TVA's B-Tec process accomplishes continuous destruction of both water contaminants and volatilized airborne contaminants in the same processing unit.

This simplification substantially reduces process footprint and treatment costs while eliminating contaminated off-gases/odors or other secondary wastestreams.

TVA's mobile B-Tec demonstration unit is used to develop information for commercial deployment. This 200-cubic-foot, fully automated demonstration unit has achieved over 98% VOC destruction at a water rate of 46,000 gallons per day (gpd) and VOC concentration of 9 ppm, and 100% VOC destruction at a water rate of 32,000 gpd and VOC concentration of 13 ppm – with zero release of airborne VOCs at both rates.

TVA is seeking a partner to commercialize the technology.  
More info: Keith Rylant, 256-386-2835, [wkrylant@tva.com](mailto:wkrylant@tva.com)

## USDA's Food Freshness Monitor



This plastic-wrapped package of shrimp was bought at a grocery store and kept in a freezer for two days. The shrimp were then thawed in a refrigerator for 56 hours. The food quality indicator on the left was inserted into the package after thawing. Chemical gases in the package caused the indicator to change from yellow to blue in less than an hour, indicating that the shrimp were no longer fresh. The disk on the right was placed outside the package to show the indicator's color in fresh food.

The rate of release of such gases depends on food's storage history. In this technology, a reactive dye locked in a water-repellent material reacts with the gases released during food decomposition, and changes color. Thus, a rapid and informed decision can be made about quality of food and its shelf life under the storage conditions used.

The technology provides an excellent alternative to the current methods for assessing food quality that cannot accurately estimate shelf life of food products due to unreliable storage history. This technology is also much less expensive than the current methods.

The product is fully developed, market-tested, and ready for full commercial rollout.

More info: Dr. George Pipia, 301-435-5560, [pipia@mail.nih.gov](mailto:pipia@mail.nih.gov)

Scientists at the U.S. Food and Drug Administration (USDA) have invented an effective way to monitor food quality and freshness in real time.

The major factor for food spoilage is the release of volatile gases due to the action of enzymes contained within the food or produced by microorganisms, such as bacteria, yeasts and molds growing in the food.

## Bio Material Detection

From ensuring the safety of the world's food, water, and air supplies to monitoring the efficacy of medical treatments, the detection and manipulation of biological material are critical to many large industries.

The use of magnetic microspheres for separation and identification of specific biomolecules is a growing area in biological research and diagnostics.

Los Alamos National Laboratory (LANL) has a patent pending technology for a method and an apparatus for using magnetic microspheres to bind, sort, and collect biomolecules of interest. This invention has applications in medical diagnostics, detection of bacteria and bioagents, environmental monitoring and genomics, and proteomics research, and can process a large number of biomolecules at once.

For example, magnetic microspheres can be used to determine accurate CD4/CD8 lymphocyte counts, necessary for monitoring drug therapies for AIDS at a cost and speed that make access to monitoring attainable in the developing world.

The wide variety of applications includes many biotechnology and clinical markets, which have an estimated value of more than 50 billion dollars annually.

Unique benefits of this invention include:

- Easy-to-use and inexpensive technique for biomolecular separation
- Multiplexed and high throughput
- Rapid, highly specific assay
- Rugged and field-deployable.

LANL is seeking an industrial partner to commercialize the magnetic microsphere technology.

More info: Allen Morris, 505-665-9597, [tamorris@lanl.gov](mailto:tamorris@lanl.gov)

# FLC 2005

Federal Laboratory Consortium for Technology Transfer



Mission Driven Partnerships  
Innovations • Strategies • Solutions

## Get Driven!

The Meeting for:

Technology Transfer Professionals,  
Laboratory Representatives,  
Licensing Executives,  
Venture Capitalists,  
ORTAs, T<sup>2</sup> Experts,  
Scientists, Students,  
Industry Executives

May 1-6, 2005  
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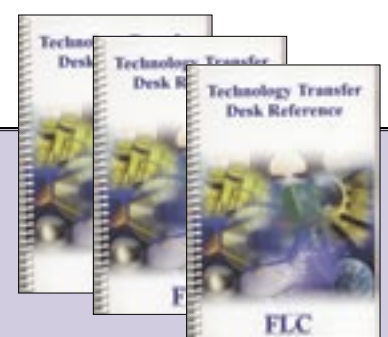
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## Federal Technology Transfer 2004

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FLC T<sup>2</sup> Desk Reference

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data that detail preparations necessary to minimize the consequences of bioterrorism attacks.

The highly visual incident command and control response system is designed in accordance with National Incident Management System standards, and the software systems and processes are rapidly deployable.

At the 2002 Utah Olympics, RAMSAFE was operating in roughly 40 days, and more than 225 law enforcement officials from 20 agencies (including the FBI, Secret Service, and State Department) underwent training.

RAMSAFE is the first offspring of the Responder Assets Management System (RAMS). In 1998 the Departments of Defense and Justice asked researchers at the DOE's Y-12 National Security Complex to convert SBCCOM's complex bioterrorism knowledge base into RAMS, an easy-to-use and dynamic automated software.

In 2001, through one of its technology transfer programs, DOE approved RAMSAFE Technologies (formerly Public Safety Systems) as the exclusive worldwide licensee for RAMS and any future derivative works. Microsoft and UNISYS have since become strategic partners with RAMSAFE Technologies.

Using Georgia and Utah as pilot programs, that partnership is developing plans for a nationwide fast-track deployment of RAMSAFE that further incorporates medical intelligence data and links to hospitals and other key resource providers.

General Physics, an information technology services firm, subsequently formed a strategic relationship with RAMSAFE Technologies to provide integration, implementation, technical, and training services in the deployment of the software to homeland security agencies and major infrastructure venues at state and local levels.

Today, various U.S. municipalities, seaports, airports, dams, schools, and nuclear and military facilities employ RAMSAFE as part of their multihazard incidence response systems, including preplanning and tabletop and field exercises.

By integrating interagency collaboration tools, operational checklists and procedures, resource management and visual intelligence, RAMSAFE enables emergency responders to save time and lives amid the worst possible scenarios.

## Nanotech Briefs

Engineering Breakthroughs in Nanotechnology & MEMS

### Nanotech Briefs Announces a Call for Nominations for Nano 50 Awards!

Nanotech Briefs magazine has announced a Call for Nominations for its first annual Nano 50 Awards competition. The Nano 50 will recognize the top 50 technologies, innovators and products with the greatest potential to advance the commercialization of nanotechnology.

No Cost to Submit!

#### Award Categories

Technology  
Product  
Innovator

#### Submission Deadline

February 1, 2005

#### Rules and Nomination Forms

[www.nanotechbriefs.com/nano50](http://www.nanotechbriefs.com/nano50)

Bayh-Dole Turns 25, from page 1

have exclusive rights under government patents to manufacture and sell resulting products. Understandably, companies were reluctant to invest in and develop new products if competitors could also acquire licenses and then manufacture and sell the same products.

Accordingly, the government remained unsuccessful in attracting private industry to license government-owned patents. Although taxpayers were supporting the federal research enterprise, they were not benefiting from useful products or the economic development that would have occurred with the manufacture and sale of those products.

In 1980, however, legislators and the administration concluded that the public would benefit from a policy that permitted universities and small businesses to elect ownership of inventions made under federal funding and to become directly involved in the commercialization process. This new policy would also permit exclusive licensing when combined with diligent development and transfer of an invention to the marketplace for the public good. It was understood that stimulation of the U.S. economy would occur through the licensing of new inventions from universities to businesses that would, in turn, manufacture the resulting products in the U.S.

The principles of the Bayh-Dole Act were the result of years of intense and emotional debate dealing with fundamental concerns. The record shows that the debate included such issues as whether exclusive licenses would lead to monopolies and higher prices; whether taxpayers would get their fair share; whether foreign industry would benefit unduly; and whether ownership of inventions by a contractor is anticompetitive. Safeguards were hammered out in numerous legislative drafts. It is certain that the Act became much stronger because of the thorough debate that took place prior to its passage.

From the beginning, it was obvious that economic interests rather than academic science interests were the driving forces for the change in government policy. As early as October 1963, President Kennedy had issued a Presidential Memorandum and Statement of Government Policy. This memorandum marked the beginning of an intense discussion about the effect that government patent policy had on commercial utilization of federally sponsored inventions, on industry participation in federally sponsored R&D programs, and on business competition in the marketplace. It was not until industry, academia and the government recognized that their individual interests could be reconciled in the pursuit of commercialization that passage of the Bayh-Dole Act became possible and ended years of debate. Until the Bayh-

Dole Act became effective on July 1, 1981, the federal agencies kept tight control over intellectual property rights resulting from funded research, premised largely on traditional expectations rooted in the procurement process. After the passage of the Bayh-Dole Act, codifying and implementing it at the agency level was not an easy process.

As the success of the Act became quickly apparent, subsequent legislative initiatives broadened its reach. On a nationwide basis, the re-

sults support the conclusion that the Bayh-Dole Act has promoted a substantial increase in technology transfer from universities to industry, and ultimately to the public. Certainty of title to inventions made under federal funding is perhaps the most important incentive for commercialization.

Implementation of uniform patenting and licensing procedures, however, combined with the ability of universities to grant exclusive licenses, is also a significant ingredient for success. This combination of factors led to a tremendous acceleration in the introduction of new products through university technology transfer activities.

Certainty of title to inventions made under federal funding has one other significant benefit—it protects the right of scientists to continue to use and to build on a specific line of inquiry. This is fundamentally important

*"As Vannevar Bush foresaw, enormous benefits to the U.S. economy have occurred because of federal funding of research. These benefits have been significantly enhanced by the adoption of federal policies encouraging technology transfer."*

to research-intensive institutions because of the complex way research is typically funded, with multiple funding sources. The institution's retention of title to inventions is the only way of ensuring that it will be able to accept funding from interested research partners in the future. This is a critically important benefit of the Bayh-Dole Act that is not widely understood.

As Vannevar Bush foresaw, enormous benefits to the U.S. economy have occurred because of federal funding of research. These benefits have been significantly enhanced by the adoption of federal policies encouraging technology transfer.

Such policies have led to breathtaking advances in the medical, engineering, chemical, computing and software industries, among others. The licensing of new technologies has led to the creation of new companies, thousands of jobs, cutting-edge educational opportunities and the development of entirely new industries.

Thus, the Bayh-Dole Act continues to be a national success story, representing the foundation of a successful union among government, universities, and industry.



2005 World's Best Technologies Showcase

March 28-30, 2005

Wyndham Arlington • Dallas Ft. Worth Metroplex






This elite, national event showcases new, cutting-edge, first-in-market technologies before the world's leading seed investors, venture capitalists and corporate licensing experts. Participants in previous years have raised millions in venture capital, been featured in magazines such as Fortune and Time, and succeeded in selling or licensing their platform technologies.



## Inside the FLC

## FLC-Sponsored Event Leads to Vision Quest

The Rehabilitation Engineering Research Center (RERC) on Technology Transfer is seeking technology solutions as a result of its stakeholder forum on "Vision Technologies," which was cosponsored by The Smith-Kettlewell, RERC for Blindness and Low Vision, and the Far West Region of the Federal Laboratory Consortium.

The purpose of this forum was to identify the critical needs of persons with visual impairments and to outline the requirements needed to enable technology solutions to address those needs.

Outlines of the problem areas are as follows:

## I. Access to Graphics

## A. Refreshable Braille display

1. Must be able to display a full page of tactile text and graphic information.
2. This display should consist of cells that are modular, have low power consumption, have a high packing density (approximately 20 pins per inch), and good heat dissipation.
3. Provides users orientation and location information within the document
4. The ability to zoom in and out of an area of interest
5. Sufficient memory to store data within the device

## B. The input interface for a Braille display should have

1. The ability to enter numerical and textual information
2. A touch screen with the ability to perform mouse functions
3. A continuous (membrane) surface for the device, and provide the user course directional information to get to on-screen events.

## II. Access to Text

## A. A hand-held video camera for optical character recognition (OCR) to provide access to text in the environment.

1. Should be able to extract numeric information, whether printed or

electronic, and provide audio and/or visual feedback.

2. Has the ability to read arbitrary text in multiple environments
3. Can localize and identify text in arbitrary environments
4. Must be compact, portable and have an untethered power source

## III. Access to Consumer Electronics

## A. Personal Universal Accessor

1. Allow for multiple input and output formats
2. Provide options for menu access

## IV. Wayfinding Technologies

## A. Travel route planning device

1. Should be portable
2. Incorporate a cell phone
3. Work indoors and out
4. Provide travel route directions for pedestrian and public transportation systems
5. Calculate the distance, time, cost and level of difficulty of the route
6. Provide information about the immediate surroundings, including current location, nearby buildings and public facilities

## B. Portable obstacle avoidance device

1. Allows the user to identify obstacles in their immediate path both inside and outside of buildings, and helps them navigate around those obstacles
2. Recognizes and notifies the user of an obstacle's relative position to the user, regardless of their size and speed of approach
3. Identifies inaccessible terrain at a distance corresponding to a street width
4. Provides a variety of output options that do not interfere with the user's auditory cues.

For more detailed information, please visit the T-2 RERC's web site at <http://cosmos.buffalo.edu/t2rerc/development/demand-pull/need.htm#vision>.

## DOD Funding for Enviro-Research

The Department of Defense, through the Strategic Environmental Research and Development Program (SERDP), will be funding environmental research and development in five core thrust areas: Cleanup, Compliance, Conservation, Pollution Prevention, and Unexploded Ordnance.

The objective of this effort is to identify, develop, and transition environmental technologies that relate directly to defense mission accomplishment. SERDP intends to fund multiple projects within each core thrust area. Projects will be selected through a competitive selection process.

Pre-proposals for the federal sector are due by Thursday, March 10, 2005. Detailed instructions for federal and private sector proposers are available on the SERDP web site at [www.serdp.org/funding/funding.html](http://www.serdp.org/funding/funding.html).

SERDP will also be funding environmental research and development through the SERDP Exploratory Development (SEED) program.

The SEED program is designed to provide initial funding for high risk, high payoff projects in all five core thrust areas. For FY06, SEED is focusing on Compliance and Conservation.

All SEED pre-proposals are due by Thursday, March 10, 2005. Detailed instructions for both federal and non-federal proposers are available on the SERDP web site at [www.serdp.org/funding/funding.html](http://www.serdp.org/funding/funding.html).

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DC on T<sup>2</sup>, from page 1

It is just as important to reap the economic benefits from that investment. Just think about what technologies drove our economy 25 or 35 years ago; then jump forward to today or 10 to 20 years from now and see what is driving our high tech economy. Technology transfer is a major reason for that transformation. I hate to imagine what great discoveries would have been left on the shelf without it. Technology transfer is the gas pedal that is pushing new technologies to the market faster than ever.

Why am I offering this from my perch as the FLC Washington, DC Representative? Ask some of our chronologically gifted founding members or read the FLC history, and you'll soon realize that the FLC presence in Washington was critical to building the foundations for all the successes that technology transfer practitioners make happen. Does that mean the work is done? I don't think so. Our elected officials need constant reminders that this program still means a lot



to the country. After all, Messrs. Stevenson, Wydler, Bayh and Dole are no longer in Congress, and many of their colleagues who were fellow champions of technology transfer have moved on as well. Also, there are some preliminary discussions underway that I hope will produce a legislative and policy agenda that can make technology transfer even more capable and more important to economic development. It would be premature on my part to lay out what some of those ideas for change are, but I think there is always room for change. When-

ever the FLC or AUTM meets, the discussions amongst the members revolve around how to make tech transfer work/how to solve a problem that is preventing it from working. The positive atmosphere of technology transfer professionals in this network-based "contact sport" profession is what makes this program unique.

Can you make a difference as we look to the future? Absolutely. As the Washington policy makers focus on policy and legislative initiatives, I ask you to send me your ideas and suggestions. The FLC is not interested in setting policy, but it certainly should (as it has from its inception) share its views on what new or modified policies should be considered to make a great program even better. Be advised that I believe the ideas count more than the author, so my approach is to share without attribution, unless you insist otherwise.

In closing, I'd like to share one anecdote. From time to time, we receive visitors from other industrialized countries around the world.

They want to understand the U.S. legislative and policy framework for technology transfer and they want to know what the FLC is. By the time they leave my office, it's pretty easy to conclude that they come here because they consider U.S. technology transfer to be the world's gold standard—and one they would like to attain for the benefit of their economy.

## The FLC Green Book



*Federal Technology Transfer Legislation and Policy* provides the principal statutory and presidential executive order policies that constitute the framework of federal T<sup>2</sup>.

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*U.S. Army Saves Energy, from page 1*

mentally concerned design for Southwest Arizona. The appeal of this house is not just its outward appearance, but also the principles of sustainability, energy efficiency, and resource efficiency that it embodies.

*Major Features Interests*

- Solar heating
- Photovoltaic-powered
- Energy Star appliances
- Attic vents
- Shading windows with porch roofs, ramadas and low-e windows
- Insulating roof and walls to high levels, reducing internal loads by the use of high-efficiency lighting
- Providing heat exchange to precool ventilation air (using a heat recovery ventilator)/infiltration
- Building mass, crawlspace installation, roof color, generating hot water by a solar DHW heater
- Locating all indoor components of the HVAC system within the insulated envelope
- Duct design and a high-efficiency heat pump.

The all-electric home is constructed of structural insulated panels (SIPs). The insulation level is much higher due to the use of SIPs for virtually the entire exterior envelope of the house. The SIPs' core is polyurethane foam, which has an R-value of 7 per inch. The SIPs also do an excellent job of air sealing.

The choice of SIPs is an efficient way to use materials. The polyurethane foam core, though a petrochemical due to its foam nature, uses little material for a given volume.

Further, it is recognized that high performance insulation is an energy-valid use of petrochemicals, and its insulation value lasts indefinitely. It also performs part of the structural function.

The floor trusses are made of crop wood 2x4s with steel diagonals (with a reasonable recycle

content). Gypsum board interior surfaces were selected from products that use recycled paper faces and power plant gypsum cores. The concrete used in the crawlspace foundation walls was made with fly ash cement.

These materials comprise the vast preponderance of the materials content of the house and represent a reasonable environmental response.

The dominant cooling load includes architectural shading, uses high-performance windows and a high-efficiency air conditioner, and solar thermal and photovoltaic systems.

The house incorporates sustainable design strategies utilizing the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, and qualifies for Energy Star rating.

The model indicates at least a 66% improvement from the standards of the Model Energy Code for Arizona. Material selections are environmentally sustainable, durable, low maintenance, and commercially available.

Because annual rainfall in Yuma is so low (average 3.2 inches per year), harvesting is impractical. The goal for the environmental model home is to reduce indoor and outdoor water use by 50% compared to a typical production home in Arizona by using the following methods.

USAYPG chose many products for this model based on their ability to conserve water, including low-flow fixtures and water-saving devices in sinks, showerheads, toilets, and dishwashers.

The EEMH contains separate bathrooms for the master suite and the guest room, providing the opportunity to demonstrate various brands of showerheads and other bathroom fixtures.

The master suite bathroom and the guest bathroom are both equipped with new low-flow showerheads, made of solid brushed nickel, designed to exceed 1994 EPA water conservation regulations.

In addition, the incredible head flow rate saves around 50% of a typical shower's water consump-

tion. The bathrooms also feature a low-water-use toilet (1.6 gallons or less per flush). The landscape design was based on a weighted system of criteria and on properly planned xeriscape principles.

The design took into account regional landscape requirements and existing vegetation, efficient irrigation, and appropriate plant selection for the right place.

National Renewable Energy Laboratory (NREL) researchers have been monitoring the energy performance of the home since June 2003 as part of the DOE's Building America (BA) Program.

They have also created a computer model of the home using DOE2 building energy simulation software.

Overall, the home is one of the most efficient homes built as part of the BA Program in 2003.

For space conditioning and water heating, the energy demonstration home consumes only a third of the energy of a standard home.

These savings are due to the home's improved insulation, low-e windows, energy recovery ventilator, high-efficiency air conditioner, and solar water heater.

The home's solar electric system, compact fluorescent lighting and Energy Star appliances also contribute to energy savings.

The key design features of this model home have been incorporated into the currently funded YPG FY 03 Family Housing Construction Program, which will construct 25 homes.

These features will also be incorporated into the FY05 and FY07 programs, which essentially replace all current housing at YPG for enlisted and officer personnel.

This will make YPG one of the most energy efficient bases within the Department of Defense, while affording our military excellent living conditions.

T O D A Y   A T   W W W . F E D E R A L L A B S . O R G



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