

Online Services Revolutionize Tech Transfer

Important new players have burst onto the tech transfer scene—the tech transfer dot-coms. Offering a variety of online services, these “buying and selling superstores” promise to change, expedite, and improve the tech transfer process and compress the entire tech transfer timeframe.

Almost overnight, the web has become an effective tool for acquiring, showcasing, and exchanging new technologies from hundreds of technology sources. With no geographic boundaries, we are truly moving into a global, knowledge-based economy—and potentially establishing a new tech transfer paradigm.

Opportunities Abound

As a result of this recent online activity, licensing revenues have risen dramatically in recent years (even within the past few months). Analysts at [yet2.com](http://www.yet2.com) have estimated that the \$100 billion global technology licensing market could increase fivefold in the next several years.

With an estimated \$6 trillion worth of non-performing or dormant intellectual property assets in the U.S., Western Europe, and Japan, it is believed that less than 3% of total intellectual property resources are being commercialized. According to **Argus Insights**, the estimated value of unused U.S. intellectual property ranges from \$100 billion to \$500 billion. The U.S. Patent and Trademark Office reports that 160,000 patents were issued in 1999 (an average of 18 an hour!), and it is expected that more than 95% of those patents will not be commercialized.

Industry and Labs Benefit

Large and small technology companies have discovered the bounty

and efficiency of the online technology markets. Federal, university, and private labs see the dot-coms as a doorway to their technologies—offering greater access and visibility. Once labs have subscribed or listed their licensable technologies with a dot-com, they

URLs for Tech Transfer Dot-Coms

www.anidea.com	www.patentauction.com
www.brainsupply.com	www.patentcafe.com
www.chemicalpartners.com	www.patentpost.com
www.corporateintelligence.com	www.patex.com
www.delphion.com	www.pax.co.uk
www.eastman.com	www.pharmalicensing.com
www.gti2k.com	www.pl-x.com
www.hellobrain.com	www.qxhealth.com
www.inventnet.com	www.techex.com
www.ipmarketplace.com	www.technologyconnect.com
www.ipnetwork.com	www.technologyxchange.com
www.knexa.com	www.teonline.com
www.knowledgeexpress.com	www.uktech.net
www.marketlaunchers.com	www.uventures.com
www.nerac.com	www.yet2.com

Courtesy of Global Technology Index™

have access to available tech transfer tools and financial deal-making services, both nationally and internationally. The technologies are also visible to the ideal audience of engineers and scientists at some of the largest companies in the U.S. and abroad. A number of federal labs have already partnered with subscription services or full-service online firms.

“The tech transfer dot-coms offer an innovative way for our labs to push and pull technologies,” says **Dan Brand**, FLC Chair. “The FLC’s role is to bring new opportunities to the labs. We can work with dot-coms by sharing our Laboratory Locator system. We can also assist their commercial partners in their search for technologies.” In the same vein, Brand says working with

dot-coms will leverage the labs’ efforts to locate new technologies.

Dot-Com Differences

Currently, most tech transfer programs at corporations, university, and federal labs are online—more than 6,000 web sites currently feature tech

transfer information. More than 40 top dot-coms (or e-commerce sites) very actively conduct tech transfer business online—each with a different entrepreneurial focus to serve the needs of labs and industry at all levels. (To learn about three of the leading tech transfer dot-coms, see the profiles on p. 2.)

Tech transfer dot-coms fall into a variety of service models such as intellectual property marketplace, technology exchange, technology bulletin board, auction, or full-service operation.

They may also specialize

in a particular area (e.g., chemical, biotech) or offer opportunities in a variety of industry areas. Methods of payment vary as well. For databases, you often pay as you go, and online registration may be for a fee. Brokers and consultants such as [pl-x.com](http://www.pl-x.com),

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INSIDE

This issue of *NewsLink* focuses on **INFORMATION TECHNOLOGY**. The January issue will focus on automotive and transportation technologies.

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DOT-COMS *from p. 1*

UVentures, and yet2.com are paid only through successful licensing and partnering deals.

Tech Transfer's Online Future

Unlike the much-hyped, floundering online firms in other industries, tech transfer is perfectly suited to the Internet, say tech transfer dot-com executives. But we're to expect a lot of shakedown as yet, says **Tim Janis** of **ARAC, Inc.**, a small for-profit firm that provides tech transfer brokerage services to global organizations. Janis adds that there are a lot of unknowns but, with the growing Internet economy, there will probably be pressure on technology owners to get their available resources into the appropriate tech transfer e-commerce firm.

Today tech transfer online services are growing and proliferating at sprint speed, but it is the dot-com marathoners that will maintain the pace. **NL**

For more info: An in-depth 33-page report on *Intellectual Property Sites 2000* ("A Window into Technology Markets") is available from **Argus Insights, Inc.** (info@argusinsights.com, 505-242-6175). The report is free to AUTM members and costs \$250 otherwise.



One of the first online services, **UVentures**

developed its tech transfer niche with universities and public not-for-profits. Since then, it has partnered with the **National Technology Transfer Center** to list **NASA** technologies. Other federal partners include the **National Institutes of Health**, **Oak Ridge National Lab**, and **Lawrence Berkeley National Lab**. Today, the numbers—240 universities, federal labs, and corporations; 7,500 technologies; and 4,500 companies looking for technologies on both the buy and sell side—increase almost daily. The company expects to list 10,000 at the end of this year. To date, more than 900 matches between potential buyers and sellers have been established.

All technology areas are represented. However, CEO **Craig Zolan** says, "Our strength is in biotech, life sciences, pharmaceuticals—where much of the action is.... We've just begun to scratch the surface of opportunities in tech transfer." UVentures does not render patent or legal advice but offers "content and community"—that is, consulting, marketing, licensing assistance, best practices, and help tapping into the broad community knowledge base. Most important, UVentures assists in the difficult handling and management of intellectual property.

UVentures introduces new industries and enables matches even between non-obvious industries, non-obvious applications, or U.S. and foreign owners. "We know where synergies are," says Zolan. "Like a shopping adventure, you may find something you didn't expect." The company is paid upon closing a transaction according to a fee schedule. After the first click, an e-mail response is guaranteed within 24 hours.



The **Patent & License Exchange (pl-x)** is "the only tech transfer financial market for intellectual property (IP) assets," says **Alex Arrow**, Chief

Financial Officer. Therefore, Arrow says, industry and companies can close deals faster. The company recently became the only online IP forum to close a transaction.

A safe global marketplace for intangible assets—"patents, trademarks, and know-how"—pl-x offers standardized internationally compliant deal documents, market-driven valuation, and IP escrow. Able to deploy information and risk reduction tools of disciplined financial markets to transform patents into liquid financial assets, pl-x has automatic patent validity insurance, covers every asset licensed/assigned through the company, and protects both licensor and licensee. With the world's only IP escrow, industry and companies can strike deals with new companies with the assurance of getting paid.

pl-x represents more than 360 technology-rich, IP-owning entities—including large technology portfolios from such heavy hitters as **3M**, **Bio-Tech General**, **Bristol Meyers**, **Dow**, **Hitachi**, **Procter & Gamble**, **Ford Global Technologies**, and others. Representing all areas of science, they see the most activity in advanced materials, information technology, automotive, life sciences, and express package transport and logistics. Its global IP catalog of licensable technologies is searchable by the technologies' physical attributes and operating limits rather than key words.



Successfully matching dozens of organizations in tech transfer deals since going online last February,

yet2.com has offices in the U.S., U.K., and Japan and has signed up companies in Europe and Asia—adding to its growing list of technologies. More than 50 of the world's largest technology companies joined as founding members—and signed up thousands of users to search the site for available technologies. yet2.com believes its portfolio firms may collectively account for almost 15% of the world's R&D.

Scott Beal, Business Analyst, explains that yet2.com does not focus on patents because the "legalese" precludes effective marketing. Instead, its technology providers fill out a form that accurately describes the technologies' benefits, performance highlights, and potential applications. Companies can also group multiple patents into one cohesive technology listing to represent more complete solutions.

Featuring most industries or market segments, yet2.com has united companies from radically different industries, introduced Asian companies to U.S. companies, and linked the largest of companies with the smallest of organizations. With its expanded exposure and this "cross-industrial fertilization," Beal says companies often find applications for a technology from a completely different industry. Both the organizations with available technologies and companies wanting technologies to augment their product development efforts benefit. Such partnering saves time and money in the development process, avoids duplication, and enables companies to get better products to market faster.



FED LABS FLASH

Technology transfer news, notes, and events within the federal lab community

Winner of Information Security Competition Announced

An international competition to develop a new encryption technique ended October 2 when Secretary of Commerce **Norman Y. Mineta** announced the nation's proposed new Advanced Encryption Standard (AES)—Rijndael. "This is a very significant step toward creating a more secure digital economy," Mineta said. Computer scientists at the **National Institute of Standards and Technology (NIST)** organized the competition to develop a strong information encryption formula to protect sensitive data in federal computer systems. Many businesses will also use AES. Once the selection is announced in the *Federal Register*, NIST will receive public comments for 90 days. After this time, the proposed standard (with any appropriate revisions) will be submitted for adoption as an official federal standard. The process should be completed by spring 2001.

For more info: <http://csrc.nist.gov/encryption/aes>

Air Force, NY State Break Ground for Joint Project

On November 1, the **Air Force** and New York State signaled a new era in information technology R&D with groundbreaking ceremonies for a \$23.8 million **Air Force Research Laboratory (AFRL) Information Directorate** research facility. The new facility will be the centerpiece of a unique, congressionally approved partnership between the Air Force and New York State. The project is the result of joint funding and support by the **Air Force Military Construction Program** and the state's **Empire State Development Corp.** The new building is scheduled for completion in October 2002.

For more info: Francis L. Crumb, 315-330-3053, crumbf@rl.af.mil

DOE's Petroleum Office Integrated into National Laboratory System

On November 1, Energy Secretary **Bill Richardson** announced that the DOE's primary field office for petroleum technology—the **National Petroleum Technology Office (NPTO)** in Tulsa, OK—will become part of the DOE's national lab complex as an arm of the **National Energy Technology Lab (NETL)**. According to Richardson, "This action creates a much tighter linkage between our petroleum technology program and our lab research structure." NPTO previously operated as a separate part of the DOE's fossil energy organization. Although NETL is located in Morgantown, WV and Pittsburgh, PA, NPTO's 26-employee office will remain in Tulsa and continue to be the lead site for coordinating the DOE's oil technology program.

For more info: www.fe.doe.gov/techline/tl_npto_netl.html

ARL MSRC Joins Most Powerful Computing Sites

The **Army Research Lab's Major Shared Resource Center (MSRC)** is adding 1,280 next-generation SGI and IBM processors—quadrupling computational processing power and making the facility one of the world's most powerful computing sites. The center will now be able to handle more than 2 trillion floating point calculations per second. MSRC supports DOD research with high-performance computers, customizable software, networks, storage, programming, and end-user care and guidance.

For more info: www.arl.hpc.mil

Free Economic Development Newsletter

Thanks to a recent grant from the **Commerce Department's Economic Development Administration**, the *SSTI Weekly Digest*—published by the **State Science and Technology Institute (SSTI)**—is now available free to anyone interested in tech-based economic development. The electronic newsletter summarizes the top issues of the week for the science and technology community.

For a free subscription: www.ssti.org/Digest/digform.htm

PNNL to Play Role in Biological Sciences Initiative

The **DOE** and its **Pacific Northwest National Lab (PNNL)** are taking several actions to make PNNL a key player in the field of genome research and proteomics (a new area of scientific study expected to lead to breakthroughs in human health and environmental cleanup). The DOE is launching a multimillion dollar annual program at PNNL to develop a new generation of biological instrumentation expected to accelerate proteomics research. PNNL will also join the DOE's **Joint Genome Institute** and is presenting long-term plans for a biological research program.

For more info: www.pnl.gov/news/2000/00-37.htm

Agreement Gives Biotech a New Dimension

NASA has entered into an agreement with **Fisk Ventures, Inc. (FVI)** to develop commercial medical products using NASA's bioreactor technology. NASA invented the bioreactor as a way to study the impact of microgravity on cellular growth. FVI and **In Vitro Technologies, Inc.** have formed a joint venture to turn this model into scientific and commercial successes. The new venture, **StelSys**, will focus on commercializing microgravity research in areas such as biomolecule production, natural vitamin D3 production, culturing infectious diseases, and liver assist devices. **NL**

For more info: <ftp://ftp.hq.nasa.gov/pub/pao/pressrel/2000/00-143.txt>



TECHNOLOGY WATCH

Federal laboratory technologies available for technology transfer

One-Stop Shopping for Software

Many powerful software programs developed at the DOE's Argonne National Lab (ANL) have commercial applications. Argonne's Software Shop is a unique web site that describes ANL's available software and lists licensing fees. Interested parties can print out and sign agreements preapproved for licensing purposes. Written in nontechnical language, software descriptions include examples of possible applications to help potential users identify how the software might help their companies. The site also includes links to more detailed info, manuals, and demos. Available applications fall into these categories: energy management and simulation, process control, computation and algorithms, geographic information systems, information processing, and the Internet.

For more info: www.techtransfer.anl.gov/software/index.html

Taming Atoms to Power Future Supercomputers

A maze of mirrors and lenses directs laser beams around a circuitous path on a metal table at the National Institute of Standards and Technology (NIST) in Gaithersburg, MD. A similar setup appears 1,600 kilometers away at NIST's Boulder, CO campus. As haphazard as the arrangements appear, they are helping NIST scientists manipulate atoms at the quantum level—supporting efforts to create quantum bits (qubits) for futuristic computers that could make today's supercomputers look like a slide rule. The experiments are seeking to entangle atoms in such a way that measuring the energy level of one would reveal the energy level of another—even if they are widely separated. Physicists in NIST's Colorado labs have demonstrated that it is possible to entangle four atoms. They are now working with their Maryland colleagues to entangle even greater numbers of atoms, which would exponentially increase potential computing power.

For more info: Linda Joy, 301-975-4403, linda.joy@nist.gov

Carbon Nanotube Computer

DOE Lawrence Berkeley National Lab (LBNL) researchers have fabricated a new, 3-D, high-density, nonlinear, electronic computing element using a matrix of carbon nanotubes. The new nanotube element contains a device density estimated to be orders of magnitude higher than state-of-the-art silicon technology and is expected to have exceptional speed and thermal dissipation characteristics. The element can serve as a computer processing "chip," with

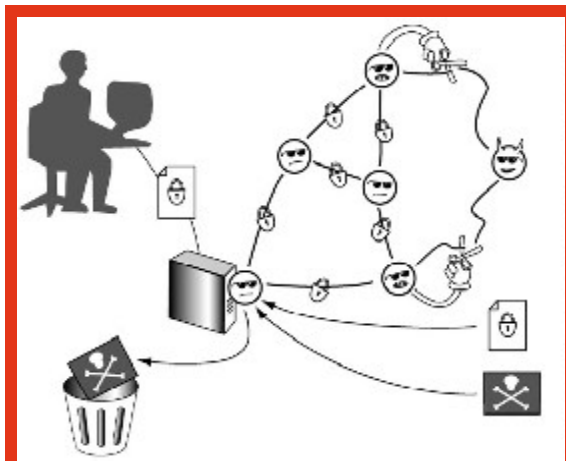
m inputs and n outputs (m=10, n=10 in prototype device). The devices will also find application in the electronics and auto industries as switches and sensors. The technology is currently available for licensing or collaboration.

For more info: LBNL Tech Transfer Department, 510-486-6467, TTD@lbl.gov

Intelligent Agents Challenge Computer Intruders

An intelligent software "agent" that can defend itself alone and in groups has been created at the DOE's Sandia National Labs. In March, a coalition of these cyberagents

successfully protected five network-linked computers from a concentrated attack by the Red Team—an expert hacker group at Sandia that tests the defenses of government and corporate computer systems. (For more info on the Red Team, go to www.sandia.gov/media/NewsRel/NR2000/redteam.htm.) Still in the lab stage, the cyberagent functions as a multiagent collective—a distributed program that runs on multiple computers in a network. The program reacts with suspicion to "port scans" that scan all ports—even if the scan



Sandia's Secret Agents: Agents in a collective communicate over secured links on the Internet or an intranet. Malicious agents (those with horns) are detected and cut off from the collective. Properly authenticated data is allowed into the collective, but bad information is rejected. Illustration by Laurence Phillips and Shannon Spires

takes place over a long period of time. The agent works by setting up a supra-net collective that constantly compares notes to determine what unusual requests have been received. Because of this, system response is not limited to waiting until a defense has been devised and put into a virus checker. The program also integrates security functions with normal services (such as ftp, the web, and browsers) and is sensitive enough to detect very faint probes almost indistinguishable from system noise. Although release of the program for consumer use is three years away, the basic agent program will be ready for specific applications in security-critical businesses and government next year.

For more info: www.sandia.gov/media/NewsRel/NR2000/agent.htm

Entangled Photons Could Promise Faster Computers

Using modern quantum physics, a research team from NASA's Jet Propulsion Laboratory (JPL) and the University of Wales has discovered that entangled pairs of light particles called photons can act as a single unit but perform with twice the efficiency. Using a process called

TECH WATCH *continued*

“entanglement,” the research team proposes that existing sources of laser light could be used to produce smaller and faster computer chips than current technology allows. According to JPL researcher **Dr. Jonathan Dowling**, “This research potentially could enable us to continue upgrading computers even after traditional manufacturing procedures have been exhausted.” Although the research is still in its theoretical stage, entanglement might allow the use of existing sources of laser light of 248 nanometers (nm) to produce computer chips with dimensions of 62 nm or smaller. (Today’s limit is 124 nm.) Although numerous technical challenges remain, researchers have begun developing the materials required for quantum lithography.

For more info: www.jpl.nasa.gov/releases/2000/quantum.html

AFRL Research to Chart Cyberspace for Security

The Air Force Research Laboratory (AFRL) Information Directorate has contracted with **BBN Corp.** (Cambridge, MA) to develop a baseline taxonomy on which to build a foundation for the development of a formal science of cyberspace. The 27-month agreement, “Cartography of Cyberspace,” is funded by the **Defense Advanced Research Projects Agency (DARPA)**. “The goal...is to take a fresh look at the area of information assurance to better understand how to design systems that are more secure,” said **Nancy A. Roberts**, program manager in the directorate’s Information Technology Division. “BBN researchers will produce a formal taxonomy of cyberspace by applying analogous concepts from economic market theory, signal processing, and thermodynamics.” These models will then be extended into information assurance to validate their usefulness in that context. Advanced technology developed under the program is expected to significantly affect private sector information systems.

For more info: Francis L. Crumb, 315-330-3053, crumbf@rl.af.mil

ORNL Joins Computing Elite, Surpasses 1 Teraflop

Recently acquired supercomputers from **IBM** and **Compaq** have made the **DOE’s Oak Ridge National Lab (ORNL)** home to the most powerful unclassified computers in the nation and are advancing its leadership role in computational science. The recent expansion pushes capabilities past the 1 trillion calculations per second (1 teraflop) mark. In coming months, researchers in the lab’s **Computer Science and Mathematics Division (CSMD)** will be collaborating with **Compaq** to optimize the large-scale

research applications necessary to study global climate changes, computational biology, auto safety, materials, and numerous other areas. “Our computing capabilities open possibilities for new research and new collaborations with universities, institutions, and laboratories around the world,” says **Thomas Zacharia**, director of **CSMD**.

For more info: www.ornl.gov/Press_Releases/archive/mr20000621-00.html

Improving the Quality of Internet Communication

Elaine Raybourn—a member of the **Advanced Concepts Group** think tank at the **DOE’s Sandia National Labs**—is exploring new online communication methods that will

allow her “to be in two places at once.” She is communicating using collaborative virtual environments via the Internet that, in many ways, are every bit as robust and real as face-to-face interactions. Raybourn’s expertise is making online communication technologies as realistic as possible by adding culture and a sense of place. In particular, her focus is on “object-oriented multi-user dimensions”—where people get together over the Internet to talk to each other, give presentations, conduct meetings, and manipulate data in real-time. Raybourn creates an atmosphere of reality in a

virtual space by inserting organizational culture and intercultural communication cues. Raybourn’s intent is to ensure that people like her—those with knowledge of design, intercultural communication, and human factors—are included on software development and modeling and simulation teams.

For more info: www.sandia.gov/media/NewsRel/NR2000/virtual.htm

Process Analysis Toolkit Saves Time, Money

Under a contract with the **AFRL Materials and Manufacturing Directorate**, **James Gregory Associates, Inc.** has developed decision analysis software that will allow organizations to determine the effectiveness and risks of technology development to meet specific customer requirements. The **Process Analysis Toolkit for Affordability (PATA)** helps users: define, quantify, and attack risk drivers; defend key decisions and program budgets; manage changes and assess program impact; and improve team-based planning. It also provides capabilities for performing **Integrated Product and Process Development**. Inexpensive to



Being Here and There: Sandia National Laboratories researcher Elaine Raybourn explores new communication methods in virtual environments. Photo by Randy Montoya

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apply because it uses an Internet infrastructure, PATA's unique browser technology and related standards make it convenient and easy to use. PATA has been used in more than 20 DOD programs and has reduced downstream deployment costs by more than 50%. An Army program using the tools came in 25% under budget and 20% ahead of schedule while achieving better than expected performance.

For more info: David L. Judson, 937-904-4590,
David.Judson@wpafb.af.mil

Internet-Based System Solves Problems Submitted by Businesspeople, Scientists

Argonne National Lab and partners Northwestern University and Intel Corporation have developed the first computational server that makes extensive problem-solving resources available to scientists, engineers, and businesspeople quickly and simply via the Internet. The NEOS (Network-Enabled Optimization System) Server 3.0 approach allows users to concentrate on formulating the problem to be solved while letting NEOS use a unique combination of advanced interfaces, solvers, and geographically distributed computing resources to accomplish the computation process. NEOS 3.0 is portable across architectures, web servers, and e-mail servers. Users choose the solver and submit problems via the web, e-mail, or the NEOS Submission Tool. Potential applications are vast and include possibilities such as creating optimal shift schedules for airport ground-handling activities or designing communication networks. NEOS could also help businesses offer services to customers or employees in multiple offices with software resources spread across locations.

For more info: www-neos.mcs.anl.gov

Thermoelectric Material Increases Computer Speed, Extends Processor Lifetime

Researchers at Michigan State University (MSU) funded by the Office of Naval Research believe that a new type of thermoelectric material may increase the speed of computers and extend the lifetime of processors by operating at lower temperatures. Existing thermoelectric materials drop their temperatures when zapped with electricity. However, the new material—a combination of cesium, bismuth, and tellurium—drops its temperature even more, an ideal feature for keeping computer chips cool. This is especially important because as chips become smaller and more powerful, they generate more heat. The Navy is interested in the thermoelectric materials because of their potential as an environmentally friendly way of cooling and generating power aboard ships. MSU and Tellurex Corporation have signed research and exclusive licensing agreements to further develop and explore the commercial potential of the technology.

For more info: Diane Banegas, 703-696-2868,
banegad@onr.navy.mil

Complex Computing "All for One" Standard

Scientists and engineers who have to make extremely complex calculations favor a computing approach known as parallel processing—which breaks up a computing problem into pieces that various processors can work on simultaneously. Although this process produces extraordinary results, many scientists have been frustrated in their efforts to use it. The problem is that—although it is easy to create a parallel processing computer network if the computers were all made by the same company—harnessing the combined computing power of machines made by different manufacturers is much more difficult. A new voluntary standard—the Interoperable Message Passing Interface (IMPI)—eliminates many of those problems. The first public demonstrations of IMPI took place in early November at the Supercomputing 2000 conference. Computer scientists at NIST coordinated work on the new standard—teaming up with some of the world's largest computer hardware and software manufacturers. NIST has also created a web-based conformance tester for IMPI.

For more info: <http://impi.nist.gov/IMPI>

NERSC Supercomputer Ready for Use

After a demanding round of acceptance testing, the IBM RS/6000 SP system at the DOE's National Energy Research Scientific Computing Center (NERSC) is now ready for use by researchers working on DOE-funded programs. The supercomputer will be used to develop powerful new simulation tools for modeling and understanding human health, developing new sources of energy, protecting the environment, and understanding fundamental aspects of the physical world. A key research area is simulating combustion—with the goal of designing engines that use less gas and emit fewer pollutants. NERSC focuses on computational science of scale—in which interdisciplinary teams of scientists attack fundamental problems in science and engineering that require massive calculations and have broad scientific and economic impact.

For more info: www.nersc.gov

Model-Based Process for Translating Test Programs

This invention from the Naval Undersea Warfare Center Division Newport translates test programs from a first computer language to a second computer language using a model-based process. The process involves a number of steps, including: extracting the test strategy and replaceable item callouts; converting the extracted test strategy into an asymmetric dependency model; converting the dependency model into a mode-based test strategy; extracting code segments for the existing test program; translating the extracted code segments into the second language; and merging the model-based test strategy and translated code segments into a new test program in the second language. **NL**

For more info: Theresa Baus, 401-832-8728,
bausta@npt.nuwc.navy.mil



SPOTLIGHT ON SUCCESS

Success stories from the federal lab community

NASA-Funded Software System Manages Computer Workload

Many companies face a similar computer-related problem. Hundreds of users and thousands of jobs require computation. The companies own vast amounts of computing power in heterogeneous and distributed environments. While demand on some systems exceeds supply, other resources are underused. Management finds that establishing enterprise-wide priorities is impossible to dictate, and little data can be gathered on actual system usage.

The solution—developed at NASA Ames Research Center—is the Portable Batch System (PBS). PBS is a flexible workload management system that operates on networked, multi-platform UNIX environments—including heterogeneous clusters of workstations, supercomputers, and massively parallel systems. PBS provides users with a single coherent interface to all their computer resources. Users package their work into “containers” while management is able to set enterprise-wide scheduling and use policies. PBS maximizes efficient use of these resources while enforcing policy and provides detailed usage data.

From 1993 to 1997, Veridian-MRJ developed PBS for the Numerical Aerospace Simulation (NAS) facility of NASA Ames to replace NASA’s exhibiting batch queuing system. In late 1997, Veridian-MRJ began full PBS development, support, and distribution. During the four-year development period, PBS was distributed to approximately 70 sites around the country. Since 1998, PBS

has been distributed to more than 2,200 sites around the world. Of these, approximately 820 are actively using PBS. Veridian-MRJ achieved this by creating a web site dedicated to PBS support and distribution.

The business model called for distributing PBS free and selling support services—including training, support contracts, and software customization. Sites around the world registered at the PBS web site and, once authorized, freely downloaded PBS source code. The largest area of market growth has been with the Linux cluster community—accounting for more than 60% of the current customer base. PBS is now recognized as the standard batch queuing system for Linux clusters.

In early 2000, Veridian Corporation announced that it was moving all PBS activities from Veridian-MRJ into a commercial products company called Veridian Systems, which has committed funding to fully commercialize PBS. In addition to the free version of PBS (OpenPBS™), Veridian will offer a binary “shrink-wrapped” version called PBS Pro™. By proceeding with full commercialization of PBS, Veridian is completing the process of transforming NASA-funded software into a viable commercial product—a true tech transfer success! **NL**

For more info: www.pbspro.com

Story reprinted with permission from NASA Aerospace Technology Innovation (<http://nctn.hq.nasa.gov/innovation>).

For more success stories, visit the FLC web site at www.federallabs.org

Technology Transfer on the Web

Working Draft of Human Genome Sequence

<http://genome.ucsc.edu>

www.ncbi.nlm.nih.gov/genome/guide

www.ensembl.org

These frequently updated sites contain public working draft versions of the human sequence in its most usable forms.

NASA Telemedicine Gateway

www.nttc.edu/telemed.html

This site provides industry with access to NASA-developed telemedicine technologies ready for commercialization. The page was recently honored by Links2Go.com as a “key resource” in the telemedicine field.

Global Technology Index

www.gti2k.com

The Global Technology Index (GTI) is an online intellectual property information provider that indexes technologies

available for licensing from all major government and university labs in the U.S., Canada, and parts of Europe and Asia.



New, Improved NIH Tech Transfer Web Site

<http://ott.od.nih.gov>

The National Institutes of Health (NIH) Office of Technology Transfer has a new web site and URL. The site contains info about licensing of intramural NIH technologies, available technologies, CRADAs and MTAs, extramural tech transfer, NIH stats, and useful tech transfer links.

New Wright Technology Network Web Site

www.wtn.org

This site highlights the Wright Technology Network’s (WTN) mission, services, news, events, and tech transfer success stories. WTN is a not-for-profit Ohio corporation formed by leaders from Wright-Patterson Air Force Base, the State of Ohio, and industry. **NL**



COMING ATTRACTIONS

February 11-14, 2001

**Space Technology and Applications International Forum
Albuquerque, NM**

This forum features a number of conferences and sessions on space exploration technology, thermophysics in microgravity, innovative transportation systems for exploration of the solar system and beyond, commercial/civil next-generation space transportation, space radiation and effects, and the 18th Symposium on Space Nuclear Power and Propulsion.

www.chne.unm.edu/isnps/staif2001

February 15-20, 2001

**2001 AAAS Meeting and Science Expo
San Francisco, CA**

Join top researchers, educators, and policymakers in learning about the latest tools, techniques, instruments, and information from scientific "movers and shakers" from around the world. A multi-disciplinary forum, this meeting of the American Association for the Advancement of Science (AAAS) brings together a broad spectrum of the science community. Visit the FLC in Booth 208!

www.aaas.org/meetings

February 26-March 1, 2001

**National SBIR Conference
Tulsa, OK**

The National Science Foundation—in association with the Department of Defense, the Small Business Administration, and all 10 SBIR agencies—is sponsoring this winter conference. Reps from participating agencies will provide insight into how to work with their respective agencies and answer your questions. An additional focus is info pertaining to EPSCoR states and rural areas.

www.zyn.com/sbir or
Sharon DelaBarre, 360-683-1828

April 29-May 4, 2001

**Software Technology Conference
Salt Lake City, UT**

The premier software technology conference in the Department of Defense, this show attracts 3,000+ attendees from military services, government agencies, defense contractors, industry, and academia. More than 110 presentations focus on software and systems technology and support and are designed to help IT professionals effectively manage their daily challenges.

www.stc-online.org

April 30-May 4, 2001

**2001 FLC National Meeting
Burlington, VT**

With a theme of "FLC and Beyond," this year's meeting is unique because the FLC is partnering with the Transatlantic Technology Forum (TTF) to offer attendees a variety of educational sessions focused on tech transfer practices and processes from around the world—offering attendees the chance to learn new ways of conducting tech transfer. Basic and advanced training will also be offered.

Sherry Nacci, 856-667-7727 or
www.federallabs.org

May 3-4, 2001

**AAAS Colloquium on
Science and Technology Policy
Washington, DC**

This meeting provides a forum for discussion and debate about budget and other policy issues facing the science and technology community. Since its inception in 1976, this event has grown into the major public meeting in the U.S. on science and technology issues—attracting nearly 500 of the nation's top science and technology experts.

www.aaas.org/spp/dspp/rd/colloqu.htm

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