

# High Tech Maui

## Maui High Performance Computing Center Visualization Lab Site Of Access Grid Node



Users wear stereo 3D glasses to view a simulation of "Directed High Power RF Energy: The Foundation of Next-Generation Air Force Weapons" on MHPCC's 8' X 16' Working Video Wall.

Imagine a future where researchers can realistically and effectively test medicines and surgical procedures or ship and airplane designs in a virtual environment, saving time, money or valuable resources in actual physical experimentation. The future is now at the Maui High Performance Computing Center (MHPCC) with the completion of its new state-of-the-art Visualization Laboratory for turning scientific data into animated 3D images.

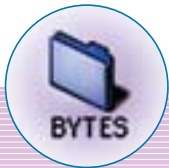
The Visualization Laboratory is also the new site for MHPCC's Access Grid node (AG), which uses a new generation of video teleconferencing for collaborative meetings at 100 nodes located worldwide at major research and corporate

sites. The multimedia displays and interactive environments support a research community for the development of distributed data, visualization and for studies relating to collaborative work in different scientific fields. The AG uses a capability of the modern Internet called IP multicast to allow a single stream of data, whether audio, video, or presentation material, to be transmitted to many sites simultaneously.

Equipped with an SGI Onyx3400 system that projects a 3,600 x 1,600-pixel image onto a large 8 foot x 16 foot Working Video Wall with Barco projectors, the

Visualization Laboratory immerses the viewer in stereo 3D via NuVision LCD Glasses that give the experience of perceiving depth in a physical environment. By delivering the most realistic visual representation possible for complex digital models, stereo 3D yields levels of technical proficiency not previously available.

Currently, the military is using the Center's Visualization Laboratory to create virtual 3-D battlefield environments for training the war fighter and to predict battlefield outcomes, to enhance weapon design, to simulate computational chemistry reactions for new materials, to replicate ship hydrodynamics for improved submarine and ship design and aerodynamics for improved jet fighter design. Medical researchers are using the facility to create virtual 3-D anatomical interactive environments for surgical planning and training, to create educational programs for medical personnel in remote areas, and to analyze fluid dynamics as applied to the human circulatory system for treatment of conditions such as arteriosclerosis. **11E**



**1** Women In Technology, a program of the Maui Economic Development Board, Inc., is one of 11 projects nationwide to receive a U.S. Department of Labor "Women in Apprenticeships and Nontraditional Occupations" (WANTO) grant to continue training for women for careers in science, math and engineering. [www.womenintechology.com](http://www.womenintechology.com)

**2** At [www.mhpc.edu/projects/wswx/mms/](http://www.mhpc.edu/projects/wswx/mms/), the Maui High Performance Computing Center produces high resolution daily forecasts which include temperature, wind speed and direction, clouds, relative humidity, precipitation, and a variety of fire weather indexes.

**3** The Learning Channel recently ran an episode of *Hyperspace* that featured the Near Earth Asteroid Tracking (NEAT) program of the Jet Propulsion Laboratory. The NEAT program detects and tracks asteroids and comets using the 1.2 meter telescope at Maui Space Surveillance Site.

## New Data on Saturn's Largest Moon at AMOS Conference

Michael Brown and Antonin Bouchez from the California Institute of Technology and Mitchell Troy from the Jet Propulsion Laboratory were among the first to receive funding from a special grant offered by the Air Force Office of Scientific Research (AFOSR), and the National Science Foundation (NSF). Announced at the 1999 AMOS conference, the initial grant offered funding of \$1,200,000 for civilian astronomers to utilize the AEOS telescope and MSSS facility atop Haleakala by paying the telescope time costs.

Brown's program, "AEOS Observations of Titan" looked at Saturn's largest moon to determine the sites of cloud formation, set limits on the frequency of methane rainfall, probe the wind fields of Titan's lower atmosphere, and precisely determine the shape and short- and long-term stability of the AEOS point spread function (PSF). Although little is known about Titan, it has a large thick atmosphere similar to the Earth's and its weather is driven by methane rather than water vapor. Brown's observations provide an early opportunity to probe the abilities and characteristics of the AEOS telescope and system while performing cutting-edge science. Preliminary results can be viewed at [www.gps.caltech.edu/~mbrown/aeos/](http://www.gps.caltech.edu/~mbrown/aeos/).

The AFOSR/NSF program takes advantage of the uniqueness of the Maui Space Surveillance Site as the only Air Force Research Laboratory facility that performs both operational and research missions. Unclassified, academic observers may conduct research at AEOS at the same time as observers working on classified programs with no breach of security.

Brown presented his findings at the 2001 AMOS Technical Conference held on Maui in September, which attracted over 270 participants from national and international organizations, government agencies, universities and observatories. In addition to covering AEOS, the sessions included a range of topics including laser applications, high performance computing, orbital debris, astronomy, adaptive optics and imaging. **11E**

## TC Kokua Offers High Tech Solution to Customer Relationship Management




Max Tsai,  
Founder of  
TC Kokua

TC Kokua, a customer contact outsource company, opened its doors in June 2001 at the Maui Research & Technology Center, a project of the State's High Tech Development Corporation. Founders Max Tsai and Matt Cooley knew that inconsistent customer service is widespread and decided to use their combined 17 years of experience in Silicon Valley to create a high tech solution for the age-old dilemma of keeping customers happy. Since their mission is "Service With the Aloha Spirit," they chose the business name "kokua," Hawaiian for assistance and support. TC Kokua partnered with software developer White Pajama for a total multi-channel and CRM integration web-hosted technology to manage customer contacts regarding account inquiries, reservations, complaints and returns, customer support, lead funnel and qualification, and product orders and information. Their system automatically pulls up the appropriate company knowledge base and customer history for the CSR to effectively communicate with the customer via telephone, email, or web chat with co-browsing options. During co-browsing, the CSR can control the customer's browser to help them complete forms or find particular web pages, while still being able to view the web chat dialogue box.

Frequent visitors to Maui, Tsai and Cooley value the islands' world-renowned "aloha spirit" and recognized how residents genuinely care about helping others. In addition, the state's first-rate telecom infrastructure, tax incentives, time zone advantages, and multi-lingual, stable and educated workforce made this an ideal location for their start-up. Tsai moved from the Bay Area to set up shop, while Cooley has remained on the mainland to nurture contacts in Silicon Valley. Though TC Kokua is launching with a handful of local businesses as clients, their vision is to outsource for companies on the mainland, Asia and Europe, which will also provide more fulfilling and lucrative job opportunities for Maui's residents.

"We're very serious about the human aspects of our service. No matter how advanced our customer resource management application is, we can never replace the human touch," says President & Partner Max Tsai.

"During this economic downturn," continues Tsai, "great customer service is a necessity because it costs more for a business to find new customers than retain their current customer base." As the only customer contact outsource company on Maui and the only one in Hawaii using such sophisticated CRM technology, TC Kokua is filling a needed niche and expecting to expand quickly. 

## Native Hawaiian Girls P


Native Hawaiian middle school students recently spent three days of summer vacation learning about space, engineering and technology at the Excite Camp sponsored by Kamehameha Schools in partnership with the Maui Economic Development Board's Women in Technology Project and the U.S. Air Force.

The first day's activities included planning a mission to Venus to learn about the math and science behind space exploration. Simulated "radar" was used to collect data on the surface of Venus, which was encoded in binary form, transmitted through "space", and interpreted into a 3D map of Venus to determine the best landing site for a spacecraft of their own design.

On Day 2, the girls visited the Maui Space Surveillance Complex and the University of Hawaii Institute for Astronomy at the 10,023-foot summit of Mount Haleakala to witness state-of-the-art technologies being used for space surveillance. Native Hawaiian teachers joined the group to explain the significance of

Haleakala in Hawaiian culture and to describe ancient Polynesian voyaging techniques using the sun, stars and ocean currents to navigate across great distances of the Pacific Ocean.

The camp culminated in a workshop on electronics which allowed the students to take apart and reassemble computers and to build electric buzzers. This was followed by a tour of the Trex Enterprises coating facility, which manufactures computer components. In addition, the girls toured the Maui High Performance Computing Center, one of the world's fastest supercomputers located in the Maui Research & Technology Park.

This event has become a collaborative model for exposing middle school girls of Native Hawaiian ancestry to math, science and engineering opportunities on Maui. 



## Wireless Solution For Disaster Mitigation


Loea Communications Corporation, a wireless communication carrier at the Maui Research & Technology Center, a project of the State's High Tech Development Corporation is collaborating with the U.S. Navy on gigabit Ultra Broadband Wireless™ technology for Rapid Deployment Fiber Replacement for Disaster Mitigation.

In Hawaii, most of the fiber optic cable is above ground, a particularly vulnerable situation during high winds and hurricanes. Rather than replacing fiber, which takes considerable time and expense, Loea's disaster recovery system will provide high-speed broadband in mere minutes to government, emergency teams, businesses and residents at a reasonable cost. Although being launched in Hawaii, many areas on the mainland that experience earthquakes and other natural or man-made disasters will benefit from the ability to immediately repair telecommunications infrastructure.

Loea's Ultra Broadband Wireless™ provides Internet access at a rate up to 1.25 Gigabits per second (Gbps), which is equivalent to over 800 T1 connections. Low-cost steerable antennas, which look like miniature satellite dishes, beam the secure point-to-point communications beyond 60 GHz at distances of up to 10 miles. Loea's parent company, Trex Enterprises

Corporation, also at the Maui Research & Technology Center, originally researched and developed the technology for the United States military.

Luxury resorts will find the product enhances their guest services. "Always on" high speed internet access, computer terminals and webcams in each guest room, in addition to an internal hotel website and tech support for guests are features that add value to business, conference and leisure travelers' stays. From the privacy of their room, guests will be able to download a movie on demand in 10 seconds, book local area activities and charge them to their room, use a guest room email address, video teleconference with colleagues, order room service, and enjoy entertainment and games for adults and children. Conferences will become more cohesive as attendees will have immediate access to the conference schedule, updates, speaker outlines, and activities and be able to easily interact with each other outside of the conference hall as well as watch presentations live from their room rather than being physically present in the plenary session.

Loea also plans to market their gigabit Ultra Broadband Wireless™ technology to businesses, schools, hospitals, libraries and residents that need more broadband, but do not have access to fiber. 



This low-cost steerable antenna designed by Loea Communications Corporation transmits their Ultra Broadband technology.



The WIT Excitel Camp provided hands-on workshops.

## Plan Mission to Venus

## Super Summer for Interns

The Maui High Performance Computing Center (MHPCC), consistently ranked as one of the top 20 supercomputers in the world, selected five graduate and undergraduate students out of 47 applicants from across the country for their eight-week Summer Intern program, whose goal is to provide hands on experience in ongoing and new research in computational dynamics and parallel programming. The program exposes students to various computer related fields and integrates academic learning with career-related employment experiences.

The five interns, four of whom are from Maui, were engaged in critical research and training, each focusing on a specific project such as programming a new modeling and simulation software application, creating a search engine for locating documents and resources on the Center's website, operating the Visualization Lab, the Geographical Information Systems (GIS), and manning the Help Desk, which provides technical support to academic, commercial, and government users of the Center's services worldwide. Interns became fluent in languages such as PEARL, HTML, LINUX, CNPEARL, MySQL, PHP & UNIX.

While working as full-time staff, interns also attended training workshops and seminars in computer science, computational mathematics, and scientific research disciplines. As well, MHPCC staff discussed job responsibilities, current projects, and the steps they took to get their current positions, which helped the interns define their personal career goals.

In the past, MHPCC hired interns and later matched them to current projects and staff members. This year, MHPCC asked staff members who wanted to mentor to interview and hire an intern based on the applicant's skills, experience and career goals in relation to their project. This provided actual job search experience for the candidates and created an unusually collaborative and committed team environment for staff and interns.

Summer Interns and MHPCC staff gather during a tour of the MHPCC computer floor.



## Cisco Networking Academy Debuts at Maui Community College

Cisco Systems, Inc., the worldwide leader in networking for the Internet, has teamed with Maui Community College (MCC) to become the site of a Cisco Networking Academy offering the highly sought after Cisco Certified Network Associate (CCNA) Certification.

The Networking Academy program employs an e-learning model, using a combination of web-based, instructor-led learning, and hands-on labs to teach students how to design, build and maintain computer networks for local, national, and global businesses. The program provides course work for a complete range of networking concepts—from pulling cable to the complex concepts of subnet masking rules and strategies for troubleshooting network and configurations infrastructure and new 38,000 sq. ft. Media, Technology and Distance Education Center will provide ideal opportunities for real-life hands-on experiences, preparing students to enter IT careers or pursue advanced education.

"In the new Internet economy, lifelong learning and technology training will be the foundation for remaining competitive in the workforce," said Cisco Chairman John Morgridge. "The Internet and education are the global equalizers in life, and Cisco is committed to improving education for today's students around the world."



## Meeting Visions 2001

### Emerging Technology and the Meeting Planning Industry

Nationally-renowned technology expert Stewart Cheifet, founder and producer of PBS's *Computer Chronicles*; Corbin Ball, CMP; and *Technology Meetings* Editor-at-Large David Erickson will speak at the second annual "Meeting Visions 2001: Emerging Technology and the Meeting Planning Industry" conference to be held December 6-10, 2001 at the Wailea Resort on Maui. The event brings together industry experts, senior meeting planners, and technology providers to explore new and emerging technologies and their impact on the meeting planning industry. For program details or registration, visit [www.mautechnologyforum.com](http://www.mautechnologyforum.com).

Speakers to date include:

- Peggy Lee, Founder, bthere.com
- Rodman Marymor, CEO, Cardinal Communications, RegWeb, and Meetings Industry Mall
- Gary Reid, GEMS Registration Services
- Jeff Rasco, CMP, Senior Vice President, JR Daggett
- Wilhelm Weber, President, International Language Services

- Louis Slaughter, CEO, Loea Communications Corporation
- David Paull, Director of Sales and Marketing, MS Interactive
- Kevin McDermott, Managing Director, Major Scale Technology
- Ed Lang, Meetings Technology Journalist and Consultant
- Todd Ogasawara, Editor, MobileViews.com
- Jason Firth, Senior Trademark Counsel, Palm, Inc.
- Marianne Williamson, Vice President of Marketing at PlaceWare

## High Tech Maui Newsletter Participants

- Maui Economic Development Board, Inc., Editor  
Ph: 800.298.6284 Email: [info@medb.org](mailto:info@medb.org) website: [www.medb.org](http://www.medb.org)
- Maui Research and Technology Park  
Ph: 808.873.8100 website: [www.mrtp.com](http://www.mrtp.com)
- Maui Research & Technology Center  
Ph: 808.875.2320 Email: [steve@mrtrc.org](mailto:steve@mrtrc.org) website: [www.mrtrc.org](http://www.mrtrc.org)
- Maui High Performance Computing Center  
Ph: 808.879.5077 Email: [info@mhpcc.edu](mailto:info@mhpcc.edu) website: [www.mhpcc.edu](http://www.mhpcc.edu)

- University of Hawaii  
website: [www.hawaii.edu](http://www.hawaii.edu)
- Office of Economic Development, County of Maui  
Ph: 808.270.7710 Email: [economic.development@co.maui.hi.us](mailto:economic.development@co.maui.hi.us) website: [www.co.maui.hi.us](http://www.co.maui.hi.us)
- Air Force Research Laboratory  
Ph: 808.874.1541 website: <http://ulua.mhpcc.af.mil>
- Boeing  
Ph: 808.875.4500 website: [www.boeing.com](http://www.boeing.com)

Are you interested in the incubation/phase-in program at Maui Research & Technology Center, a project of the State's High Technology Development Corporation? Contact Steve Perkins, Program Manager, at [steve@mrtrc.org](mailto:steve@mrtrc.org) or (808) 875-2432.

High Technology Development Corporation  
Ph: 808.539.3814 website: [www.hitechhawaii.com](http://www.hitechhawaii.com)  
Maui Community College/University of Hawaii Center on Maui  
Ph: 808.984.3213 website: [www.mauicc.hawaii.edu](http://www.mauicc.hawaii.edu)

For more information, visit the High Tech Maui website at:  
<http://www.hightechmaui.com>

# IndaSea Receives Patent for Logic Web™

IndaSea, a Maui corporation, received a US Patent in August 2001 for Logic Web™, its proprietary foundation technology for adaptive computing. Logic Web™ is composed of autonomous software units that are capable of being arranged "on the fly," functions in parallel and distributed computer environments, and can serve as the digital glue between multiple processes. IndaSea is spearheading the evolution of computers that think more like humans by creating adaptive software that intuitively responds to the user with integrative tools based on context and visual cues. The two partners, Wylci Fables and Jore Park, who used their experience in fine arts and media arts in New York, California, and Tokyo as a springboard to their current products, moved to Maui 13 years ago. They were the first commercial clients at Maui High Performance Computing Center in 1994, and have since developed several proprietary products which create a knowledge map for qualitative versus quantitative data interpretation.

Logic Web™ features several novel aspects, notably its ability to run only the part of the application that the user needs at any given time rather than having the entire application open. The user can also rearrange the program while using it to adapt to the needs that arise as data is analyzed. In addition, it is an expert system that leaves behind the way the user thinks about a project. Poised to excel in the rapid assembly of software applications for industries with a high rate of change, or where the process is especially complex, the key markets for Logic Web™ include:

- Content creation and real-time interactive streaming for the Broadband and cable TV markets
- Visual computing for process control (data and process visualization with an integrated command interface)
- Data Mining applications, particularly Internet IT and eCommerce applications, such as web metrics, web-bot searching, pricing engines, and distributed data surveying, collection and synthesis
- Bioinformatics, applying internal adaptation of the application to component behavior and automated modification of behavior accordingly

Search by Feeling™ (SbF) was born out of the need to search millions of images that have cumbersome file names like 004-1234.jpg and uses a qualitative understanding of light and composition as the basis to compare images, using one image to find other images that "feel" the same. SbF automatically creates metadata in dramatic contrast with other image search tools where a text-based description must be generated manually for each image.

Dynamic Personalization™ is a natural language-based application that operates in a continuous cycle to update collected user data and immediately deliver a contextualized response tailored to that

particular user. The process path is analyzed for user interaction, integrates influences from a variety of sources, and formulates the response relative to a diversified back end in milliseconds, serving as a foundation interface for data integration in real-time. Dynamic Personalization™ provides an individually considered response occurring fast enough to operate in the user's emotional space, encouraging impulsive reaction and intuitive navigation.

Acqua™ is a contextual database designed for high bandwidth applications for determining what the relationship of each object is to all the other objects and is particularly well suited to handle images, video clips, text, audio and data objects, supporting automated multimedia production or dynamically created multimedia publishing. For example, the query can be a sound file but related text and images will be found because Acqua is configured to search by multiple criteria paths. The qualitative approach used by Acqua™ is extremely useful for data mining among mixed or incomplete data sets, when searching for emerging trends or abstract pattern analysis, and for cultural history where contextual based thinking, not linear thinking, is traditional.

Content Creation Engine™ provides a solution to automate the production of media for distribution in the Interactive + Television/Broadband markets. Content Creation Engine™ enhances the value of available media assets to create media streams with integrated advertising, driven by target market templates or personal micro-demographics.

A recent joint venture with Hawaiian elders involves a strategy to preserve Hawaiian culture for future generations while supporting the community. The Digital Library of Hawaiian Language, Art and Culture being created using Logic Web™, Acqua™, and Dynamic Personalization™ programs will not only preserve the cultural heritage of the Islands but will also provide apprenticeship and internship opportunities for Native Hawaiians. This web screen illustrates the inter-connectivity of the programs.



Fall • 2001

<http://www.hightechmaui.com>

Maui Economic Development Board, Inc. • 590 Lipoa Parkway, Suite 103 • Kihei, Maui, Hawaii 96753 U.S.A.

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