

incubation
innovation!

HTDC *Cultivating* 
Hawaii's tech sector
HIGH TECHNOLOGY DEVELOPMENT CORPORATION

FY 2007 Annual Report

January 2007 – June 2007

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This report is an abbreviated annual report, covering the activities of HTDC from January – June 2007, switching our activity reporting to match our financials which are always reported by fiscal year. For activities from July – December 2006, please refer to our 2006 Annual Report.



A Message from the Board Chair

Fiscal year 2007 was a productive one for HTDC's board and staff. As Hawaii's leading agency for the high technology sector, HTDC continued to participate in various aspects of industry development, from offering incubation facilities to awarding Hawaii SBIR matching funds. In addition to continuing HTDC's quality activities and programs, the year was filled with advocacy and coordination, giving voice to our rich and diverse technology sector.

Over the past year, HTDC worked to ensure that our technology community was heard by the legislators. We contributed to the community through the Governor's Hawaii Innovation Initiative package, providing leadership in the legislature and helping to shepherd the Governor's initiative through the legislative process. In this way, HTDC—in conjunction with the high technology industry—is laying the groundwork for Hawaii to take its land development-based economy to one that is innovation-based, fostering sustainability and providing greater possibilities for the next generation.

The State of Hawaii and HTDC face many significant challenges, as more people turn to the technology and innovation sectors to transform our island economy into a strong global competitor. These sectors have come a long way, enjoying more stakeholders and industry related organizations than ever before. One of HTDC's goals is to increase collaboration with other economic development entities to strategically identify and address common challenges in an effective manner. Going forward, we will focus our energy and resources in leveraging our position as a quasi-State entity, bridging the gap between industry and government. We will concentrate on projects that the private sector cannot or will not undertake, such as the Kakaako life sciences project. HTDC will also focus on establishing a better infrastructure to reach out to neighbor island communities, reaffirming our position as a statewide agency.

With Yuka Nagashima as our CEO and Executive Director, I feel certain HTDC can rise to meet the challenges ahead.

With Aloha,
BRIAN GOLDSTEIN
HTDC Chair

HTDC Mission and Duties

The mission of the High Technology Development Corporation (HTDC) is to facilitate the growth and development of high technology as a viable industry sector in Hawaii's economy. HTDC is an agency of the State of Hawaii created by the State Legislature in 1983 and is administratively attached to the Department of Business, Economic Development and Tourism (DBEDT).

HTDC's duties include, but are not limited to:

- developing industrial parks as high technology innovation centers and the development of projects within or outside of industrial parks;
- providing support and services to Hawaii-based high technology companies;
- collecting and analyzing information on the state of commercial high technology activity in Hawaii;
- promoting and marketing Hawaii as a site for commercial high technology activity; and
- providing advice on policy and planning for technology-based economic development.

(HRS Chapter 206M-2)



A Message from the Executive Director & CEO

Dear Technology Sector Entrepreneurs and Supporters:

Welcome to the abbreviated annual report for the High Technology Development Corporation. This annual report documents our activities and accomplishments for the first six months of 2007 and future reports will be synchronized to the fiscal year. This change was made so that the financial figures reported by fiscal years in the annual report will now match the activities, which were previously reported on a calendar year basis. HTDC assumed a tremendous breath and depth of responsibilities during the 2007 fiscal year, from revamping our internal operations and rebranding our agency to participating in legislative initiatives that covered the entire spectrum of technology and innovation.

HTDC recognizes the growth and evolution of the technology sector. Our community now has more supporters than ever before:

- Well-established economic development organizations, such as Enterprise Honolulu, Hawaii Island Economic Development Board, Kauai Economic Development Board, and Maui Economic Development Board,
- Non-profit entities and trade associations offering support to companies, such as Small Business Development Centers, Hawaii Science and Technology Council, Hawaii Venture Capital Association, and Dual-use Network,
- Funding mechanisms or networks made possible through entities like Hawaii Technology Development Venture, HiBEAM, Hawaii Angels, and the venture capital community,
- Government agencies that facilitate industry growth such as Center of Excellence for Research in Ocean Sciences, Hawaii Strategic Development Corporation, and various branches of Dept. of Business and Economic Development and Tourism.

There are countless others that feed into the innovation pipeline in between, from the research side via University of Hawaii Office of Technology Transfer and Economic Development to the commercialization support offered by diverse federal programs such as Small Business Innovation Research awards and Manufacturing Extension Partnership programs.

HTDC was careful to focus its limited resources to better align the already existing support for Hawaii's many technology industries from optics and clean energy technologies to aquaculture and software development. The breadth of our technology sector is astounding for a community our size and in order to embrace its diversity, HTDC will collaborate with other supporters to bring their core strengths to address the needs of the companies so they can build synergies among themselves.

With the growth of our technology sectors, and with even higher expectations for the State to establish a sustainable economy based on innovation, it is no longer sufficient for HTDC to serve the technology communities primarily within the incubation centers. Rather, we will use the centers as a launching pad to bring private and public partners together to better serve a larger community. For example, HTDC could not have been able to support or provide comments for the unprecedented number of proposed bills during the 2007 legislative session if it was not for the collaboration efforts of the companies and the various support groups we work with.

HTDC is poised to lead the technology sectors along side other stakeholders and supporters through some high profile responsibilities in the coming year, such as serving as the secretariat for the Hawaii Innovation Council and negotiating for Hawaii's first commercial wet lab space. I hope that our report reflects the collaborative manner in which HTDC re-engaged itself to address Hawaii's goal to realize an innovation-based economy.

I sincerely thank my board and staff who took a leap of faith in this new direction, so I can serve our stakeholders best.

Aloha,
YUKA NAGASHIMA
Executive Director & CEO

HTDC Board of Directors & Staff

BOARD OF DIRECTORS

Chair

BRIAN J. GOLDSTEIN
(term expires 6/30/11)
Chief Executive Officer
Sunrise Capital

First Vice Chair

JAMES D. LACLAIR
(term expires 6/30/09)
Vice President-Network Operations
Hawaiian Telcom

Second Vice Chair

SHARON M. WONG
(term expires 6/30/11)
President
IMS, Inc.

Secretary / Treasurer

GAIL ANN M. HONDA, Ph.D
(term expires 6/30/10)
President & CEO
Global Optima, Inc.

JOHN H. DELONG
(Representative for
Natural Energy Laboratory of Hawaii Authority)
President
Hawaiian Cement

ORION KOPELMAN
(interim appointment)
President
Global Brain, Inc.

DAVID K. LASSNER, Ph.D
(term expires 6/30/09; Representative for UH)
Chief Information Officer
University of Hawaii

THEODORE E. LIU
(Ex-Officio for DBEDT)
Director
Dept. of Business, Economic Development & Tourism

ASSUMPTA C. RAPOZA
(term expires 6/30/10)
Director of Corporate Services
Hawaii Medical Services Association

ANTONIO "TONY" J. SAGUIBO, Jr. (until 10/30/07)
(Representative for
Hawaii Strategic Development Corporation)
Assistant Vice President, Marketing
Hawaii Medical Services Association

ROBERT N.E. PIPER
(Ex-Officio Representative for
B&F Director Georgina Kawamura)
Deputy Director
Dept. of Budget & Finance

STAFF

YUKA NAGASHIMA, *Executive Director & CEO*
JANICE KATO, *Acting COO & MEP Center Director*
KAY YAMADA, *Project Development Manager*
COLEEN YOSHINA, *Executive Secretary*
STEVE SAKUDA, *Controller*
YVONNE ISOBE, *Senior Account Clerk*
GAIL YAMASAKI, *Account Clerk*
LAURIE AKAU, *Client Services Manager (until 3/21/07)*
RUSSELL AU, *Business Development Manager (beginning 12/3/07)*
NANCY HIRAOKA, *Client Services Specialist - Service Provider Program (until 8/31/07)*
SANDI KANEMORI, *Client Services Specialist - Business Development*

SANDRA PARK, *Client Services Specialist - Workshops & Seminars*
ROBERT MON, *Federal Programs Specialist*
WAYNE INOUYE, *MEP Senior Project Manager*
DJULIANI SOEHARTO CORDIANO, *MEP Budget Analyst*
FRANK CHAN, *MEP Project Manager*
NINA ANN TANABE, *MEP Project Manager*
THOMAS QUINN, *HCATT Manager*
KRISTY CARPIO, *HCATT Secretary*
SYLVIA BOLLMEIER, *Contracts Administrator*
DEAN YOSHIDA, *Network Services Administrator*
TODD MASUI, *Web Services Administrator*

Financial Information

	FY 2007	FY 2006 <i>(As restated)</i>
Revenues and Other Funding		
State General Fund	\$ 938,416	\$ 921,934
HTDC Special Fund	\$ 2,033,203	\$ 1,987,542
Federal Funds	\$ 3,076,459	\$ 3,629,589
Total Revenues & Other Funding	\$6,048,078	\$6,539,065
Expenditures by Program		
Federal Projects including Cash Match Contribution	\$ 3,596,639	\$ 2,541,550
Federal Project Support	\$ 168,624	\$ 176,106
SBIR Grants	\$ 260,000	\$ 260,000
Technology Centers	\$ 1,273,952	\$ 1,245,734
Administration	\$ 548,238	\$ 602,059
Client Services	\$ 445,145	\$ 371,330
Public Relations/Marketing	\$ 10,511	\$ 70,501
Others	\$ 84,545	\$ 32,653
Total Expenditures	\$6,387,654	\$5,299,933
Excess (deficiency) of revenues and other financing sources over expenditures	\$ (339,576)	\$ 1,239,132
Beginning fund balances	\$ 4,546,763	\$ 3,307,631
Fund balances, June 30, 2007	\$4,207,187	\$4,546,763

* The financial statement was restated to include additional federal funds deposited for HCATT.

NOTES TO FINANCIAL INFORMATION

Sources of Funding:

HTDC primarily relies on three main sources to fund its programs and projects.

1. *The State of Hawaii's general fund:* HTDC, as an agency of the State of Hawaii receives an appropriation from the Legislature each year. The source of the funds is primarily from tax collections.
2. *HTDC special fund:* Revenues generated from HTDC's technology centers, conferences and workshops, contracts and consulting service fees are deposited into the HTDC Special Fund.
3. *Federal funds:* Funds received through agreements with federal agencies. Federally supported projects include the Hawaii Center for Advanced Transportation Technologies (HCATT) and Manufacturing Extension Partnership (MEP) program.

The State's general fund appropriation was reduced each year from fiscal year 2004 through 2006; therefore, HTDC has had to rely on funds generated through its own technology centers, programs and federal funded projects to make up the difference. General funds were reduced in excess of \$100,000 in both FY04 & FY05 and a smaller amount in FY06. There was no further budget reduction in FY07. Generating significant revenues from existing and new programs to make up for the reduced funding has been an on-going challenge. Currently, most of the non-federally funded personnel are only 50% funded by the general fund.

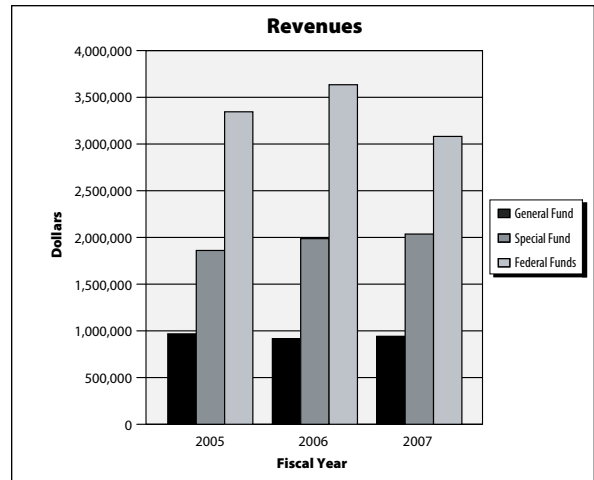
HTDC looked to other federally funded programs to supplement its existing projects, such as the MEP program. While such a program provides federal funds to HTDC, it does not fully address our funding gap as most grants have a matching requirement which further taps the resources of the HTDC special fund.

Revenues:

The illustration shows the decline in general funds in FY05 & FY06 and shift in funding to the HTDC special fund and federal funds. The increase in HTDC special fund revenues has not kept pace with the decline in general funds over the same period. Shortfalls in revenues to cover expenditures for the fiscal year are funded by reserves from the HTDC special fund.

Special fund revenues increased over the three year period primarily by maximizing the use of available space at the technology centers for rentable offices, adjusting rental rates, and generating revenues from the MEP program. Although FY2007 revenues increased over prior years, rent collections from the Maui Research & Technology Center (MRTC) were less than optimum due to temporary vacancies of large office spaces due to the departure of major anchor tenants in FY06 that relocated to a new building within the tech park or graduated from MRTC. The spaces were filled by the end of the fiscal year.

Federal funding received during a fiscal year fluctuates depending on the projects awarded, amount of funding,



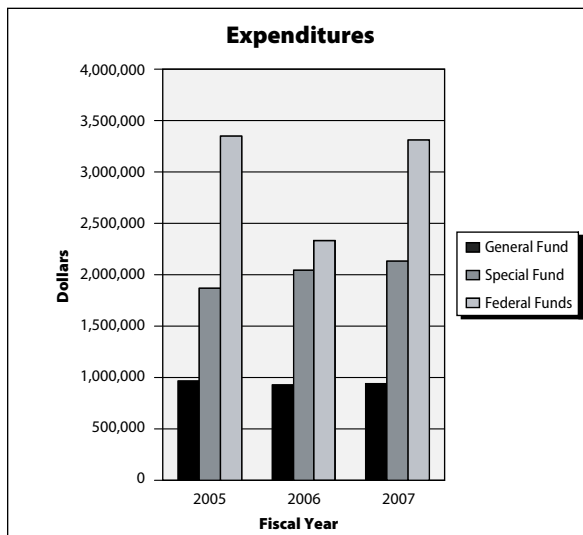
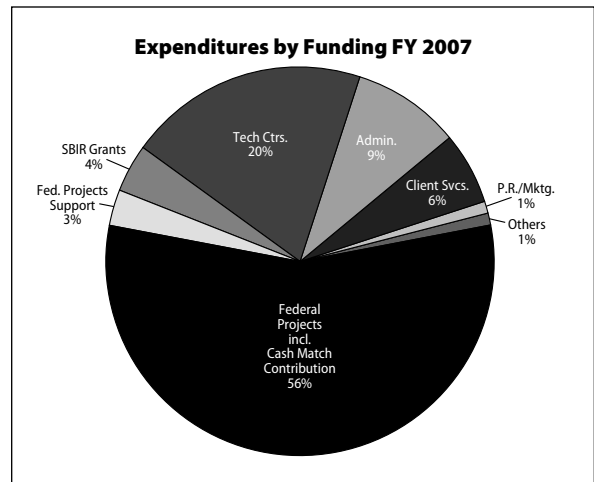
and the timing of the awards. The illustration shows federal funding varied significantly from year to year due to these factors. Such is the case with HCATT, with the U.S. Air Force awarding approximately \$3.0 million in FY06 and approx. \$2.4 million in FY07.

Expenditures:

As the general fund decreased over the past few years, there was a corresponding upward shift in special and federal fund expenditures. HTDC has limited financial resources to assign to develop major new project(s) that require seed monies and a start-up period for the project(s) to become self sufficient. HTDC inventoried its existing projects, reallocated resources and reassessed the benefits to its mission.

Due to the receipt of funds for HCATT late in FY06, some of the corresponding contracts were not executed until early FY07. The timing of the receipts and obligations in different fiscal years contributes to the swing in “excess or deficiency of revenues and other financing sources over expenditures” reported in the financial report.

HTDC’s goal is to continue to offer value-added services and programs to the private sector by refocusing on the mission and role of government, and by leveraging our resources more effectively via private-public partnerships as well as strategically seeking federal funds.



Fund Balances:

The ending fund balances are comprised of the following:

General fund	\$	0
Special fund	\$	1,269,724**
Federal funds	\$	2,937,463***
Total	\$	4,207,187

** includes funds earmarked for future building and equipment repairs and replacements of approximately \$340,000 for the two tech centers.
 *** to be awarded to contractors and cover the programs operating costs.

HTDC Technology-Based Business Support Programs

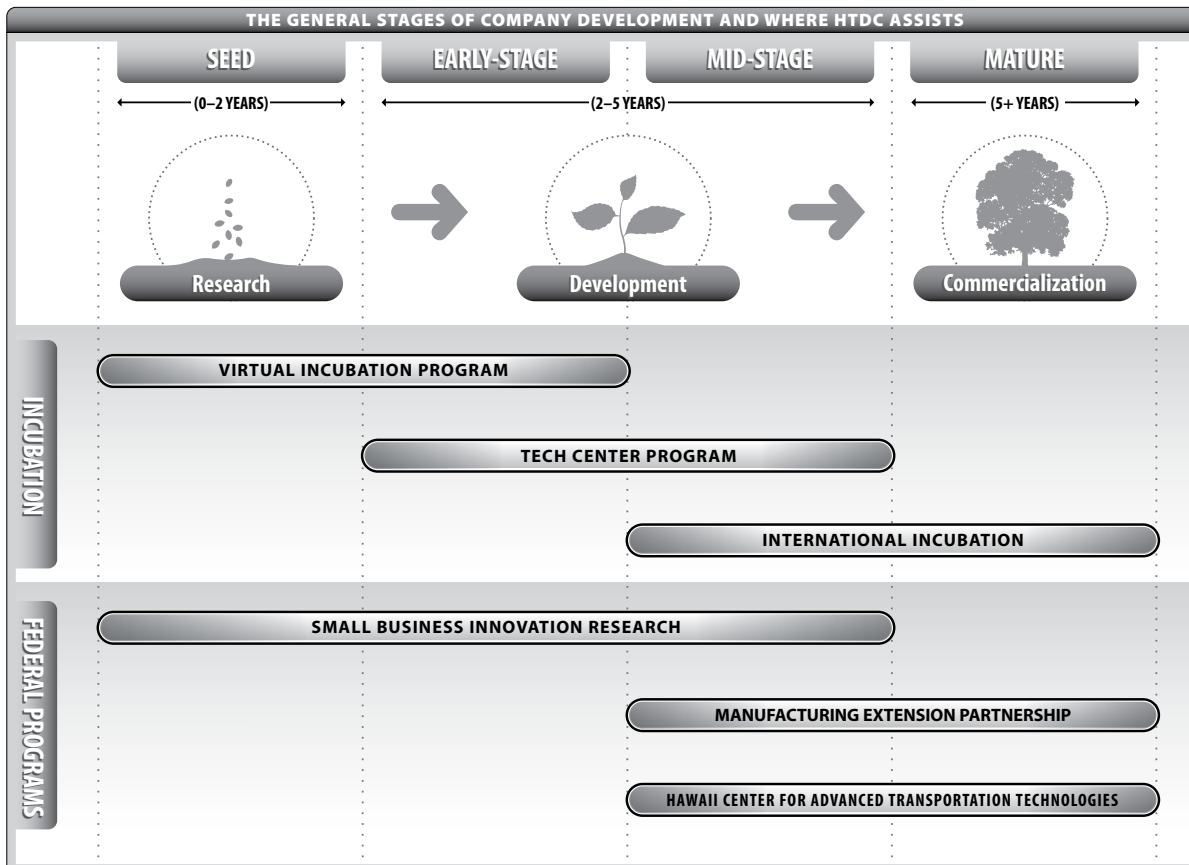
The **High Technology Development Corporation (HTDC)** assists technology entrepreneurs along the sometimes rocky, often challenging road from small seed company to mature company and from research and development to commercialization.

HTDC addresses the needs of Hawaii's tech companies, both in and outside of our incubation facilities, by tailoring our programs and services to best help these companies succeed. The graphic below represents the general stages of company development and where HTDC fits in.

Through our programs, tech entrepreneurs can:

- Be tenants in one of our technology centers (or virtual tenants) where there is a critical mass of technology-based companies;
- Develop their business savvy and know-how through mentoring, education, networking, and referrals to strategic partners and resources;
- Find qualified, trained employees for their high-tech companies through HTDC's job fairs, exhibitions and websites; and
- Acquire the funding their business needs, through greater access to alternative financing, by leveraging Federal programs and funds, and by learning how to be more successful in winning Federal contracts and grants.

In the following pages, we turn the spotlight on a few high-tech companies and touch on some of the assistance that HTDC provided to them, followed by fuller descriptions of HTDC programs and services that serve to help Hawaii technology companies succeed. For more information and content, please visit www.htdc.org/2007annualreport.



Seed Company

HTDC assists innovative companies in various stages of their development. We refer to companies in the first stage as Seed or “start-up” companies that have innovative ideas for products or services . . . and a passion and belief in that idea.

Sopogy

When Darren Kimura first inquired about renting office space at MIC in 2006, he

was already founder and chairman of Energy Industries*, a large national energy project developer, and a serial energy entrepreneur for over 12 years. Energy Industries had 12 offices in 3 countries and over 200 employees. Kimura had already founded Facility Solutions, a national service broker; Pacific Energy Services, an energy engineering company; Energy Conservation Hawaii, an energy retrofit company; eCONTROLS, a digital technology company; and Energy\$mart, a utility consulting company. He had also already acquired the Quantum companies and other



independent energy companies. His newest company, Sopogy, found the setting at MIC conducive to developing support for its Concentrated Solar Power (CSP) technology and soon decided to become a Virtual Incubation Client to tap into HTDC’s diverse technology network.

Sopogy was conceived in 2002 after Kimura’s early R&D suggested that modified concentrated solar power technology was the best option for producing energy from the sun,



efficiently and at the lowest cost. Since then, the company has taken the basic design of large solar thermal power plants and shrunk it down so it can fit on a building’s roof. Sopogy’s CSP technology promises to enable widespread renewable energy production to generate electricity, create air conditioning, dry agricultural products, produce steam for industrial systems, and much more.

Sopogy’s aluminum trough-shaped solar collectors are an evolution in solar energy generation—design improvements fashioned to increase the practicality of proven technology. “We try to go after markets that already exist, providing near-term, modest solutions,” says Kimura.

Sopogy’s focus is to build a system that costs about half as much as a comparable photovoltaic system, with a return on investment in three to five years. Its innovation is the nanocoating that insulates the reflectors from salt damage, and pivots that allow the reflectors to be flipped over and protected with additional casing in a hurricane.

The company has the units manufactured from glass, aluminum and concrete in a low-cost process that is attractive to investors, and will eventually make them affordable for consumers. Sopogy is working with two different commercial models—a 2.5-foot-wide SopoFlare and a 5-foot-wide SopoNova. “We’re the only company out there that is trying to shrink these systems,” says Kimura.

Over the next year Sopogy, with 11 current employees, plans to grow to over 100 employees. In the next 3 years, the company hopes to go public. “Our market is California, Asia,” says Kimura, “Hawaii is really only our lab” Yet the entrepreneur from Hilo has no plans to see his company leave the state. “I want to leave a legacy in Hawaii.”

Sopogy Q & A



Darren T. Kimura
Founder and
Chairman of the Board

Q *Can you tell us a bit about how you got into your industry?*

A My family owned a successful contracting company so I was exposed to business and the energy business at around the age of 11 years old. I got my early professional start trying to help my dad's clients save energy in 1992 and started my first business in 1994.

My newest company is a

culmination of experiences and knowledge gained since that time combined with the urgency to address global warming and break the fossil fuel addiction.

Q *Please tell us briefly about your company and what it does?*

A Sopogy is a manufacturer of a solar thermal concentrator. In our system we use mirrors to focus the energy from the sun to create steam. We use that steam to create electricity. This highly efficient use of the sun energy gives us renewable energy which helps reverse the effects of global warming and saves our customers money.

Energy Industries is a national energy project developer with a turn-key energy saving solution called "Energy Solutions as a Service." We help businesses save energy which saves them money by taking over management of their energy systems. Our business will provide an efficiency retrofit with the most efficient technologies and we use the customer energy savings to pay for our services. Our customers also share in the energy savings.

Q Please tell us about your initial contact with HTDC, what value you saw that caused you to become a tenant/participant?

A I contacted HTDC when I decided to launch Sopogy because I saw how they helped companies like Hoku Scientific and Blue Lava Technologies. I was living in Seattle and was deciding on opening Sopogy's offices in Hawaii or in California. I initially emailed Sandi Kanemori who was helpful and explained the services offered by HTDC. I learned about the virtual program, the leases and other services. We were very intrigued by the month to month leases, the entrepreneurship programs and the service provider package.

Q How has HTDC helped your business? What were some of the most significant, memorable ways?

A Excellent educational and diverse presentations, good vendor database, networking (CEO breakfast/lunch), expositions, positive word of mouth, and use of conference room facilities.

Q How did the Hawaii SBIR matching grant program help your company, and why should the State continue funding it?

A SBIRs are possibly the only form of income for small, start-up R&D companies with no commercial sale products. Without SBIR funding, these companies will not exist, we'd lose valuable jobs and talented people.

Q What more could HTDC/the State do to assist innovative businesses like yours?

A I would like to see more awareness for Hawaii companies. One low cost approach could be internet focused blogging on Hawaii High Tech companies. Possible newspaper or magazine articles about these companies (awareness helps companies fund raise, helps investor relations, helps sales and marketing, helps build brand). Seed funding or even small grants. Legislative positioning.

Q What are the 3 biggest mistakes people make when starting their own business and what do you suggest for them to overcome these mistakes?

A Lack of appropriate funding and understanding of work required to get businesses going. Suggestion: Work for someone else, grow the database of clients and potential investors, then take the plunge.

Weak legal foundation which leads to trouble with financing and exit. Suggestion: Get someone with experience to assist with your set-up, preferably a professional.

Developing bad company culture. Suggestion: Set the rules for your company right up front and over communicate with staff. Bad culture = bad companies.

Q What was your biggest business challenge and how did you overcome it?

A Lack of credibility - Keep your word. Work hard at getting better. Openly communicate with customers.

Q Any advice for today's young business person?

A My advice comes from a life lesson. I started at 19 and spent a lot of time early in my career trying to model my approach around other business people. It wasn't until I realized that there is no such thing as a prototypical entrepreneur and there are trillions of different ways to run a successful business that I really began to grow and learn.

Technology Industry & Client Support

HTDC connects its clients and other Hawaii tech entrepreneurs and experts in a variety of ways, with the goal of creating an akamai technology community in Hawaii where, in the words of Blue Planet Software CEO Henk Rogers, everyone “gets it!” Here are some of our efforts to give Hawaii’s technology businesses a better chance to succeed.

Workshops & Seminars

HTDC creates educational and networking opportunities by coordinating monthly workshops presented by technology industry experts. Companies gain relevant information – on presentation skills, marketing, accounting, tax benefits,



Left to right: Rachel Ogdie (HiBEAM), Guy Kawasaki (Entrepreneur/Speaker), Yuka Nagashima (HTDC), John Chock (HSDC)

intellectual property, funding, employment law and more – insight and connections that add to their business knowledge and savvy, and make it more likely that they will run their businesses successfully. Workshops are most often held at HTDC’s Manoa Innovation Center (MIC).

Workshops are also held at the Maui Research and Technology Center (MRTC) and Hawaii Innovation Center at Hilo (HICH) and locations on Kona and Kauai. HTDC partner organizations, which provide logistic and marketing assistance, include: Enterprise Honolulu, Hawaii Science & Technology Council, and the Economic Development Boards on Hawaii Island, Kauai and Maui.

Presenters from January to June 2007 were:

- **Denny McDonough** - Attitude & Response Management Systems
Can You Tell Your Story?
- **Beverly Marica** - Owner, Adecco-Hawaii
Human Resources Solutions for Start-Ups

- **Sheila Chong** - Hawaii Commercial Real Estate
The ABCs of Leasing Commercial Office Space
- **Patricia Steiner** - CEO, Venturesphere
Business Challenges of High Tech Start-Ups
- **Mark Andrus** - Partner, Grant Thornton
Research & Development Tax Credits Simplified
- **Jeff Hicks** - CEO & President, 21st Century Systems
How to Successfully Participate in the Department of Defense SBIR & STTR Programs
- **Kurt Kawafuchi** - Director, State Department of Taxation
Energy Initiatives
- **Oscar Jeter** - Sales Manager, Mettler-Toledo Safeline
Neil Ertmer - Bay Area Packaging
Food Safety Inspection Seminar

HTDC also coordinates Provider Express workshops presenting various effective business solutions to MIC clients. Presenters included:

- **Henry Montgomery** - Founder of Montpac
Outsourcing Accounting Functions
- **Greg Kim** - Vantage Counsel
Funding
- **John Bingaman** - CompUSA
Electronic Gadgets

Executive Coffee Hour

HTDC coordinates a monthly executive-level networking coffee hour forum for its client CEOs to exchange ideas and discuss pertinent topics of interest—such as workforce development and legislation—in an informal, private setting. Technology experts such as Rob Robinson of Hawaii Angels, Bill Spencer of Hawaii Venture Capital Association, John Chock of Hawaii Strategic Development Corporation, Ian Kitajima of Dual Use Networking Group, Representative Kirk Caldwell, UH College of Engineering Dean Peter Crouch and other University of Hawaii faculty, present topics of interest and offer useful business insights. CEOs also present their company status update their peers. The goal of these gatherings is to provide CEOs with an expanded network of advisors and colleagues. Here they share experiences, resources, lessons learned, best practices and camaraderie—to increase their knowledge, accelerate their growth and give them a voice for their needs and hopes.

Tech Ohana

Through partnerships with local Economic Development Boards and Chamber of Commerce organizations statewide, HTDC sponsors Tech Ohana events as a way of bringing relevant information and networking opportunities to the technology communities on Kauai, Maui and the Big Island.

HTDC used various media and events to help build awareness of its clients, programs, and the technology industry. HTDC's outreach included public service announcements about HTDC's workshops and seminars, and stories about our programs, events, and successful graduates in the local dailies and Pacific Business News.

MEDIA

HiTechHawaii.com Portal

HiTechHawaii.com is the portal to Hawaii's high technology industry. Tech resources such as news, events, businesses, and jobs can be found here.

Over 1,900 people are on the HiTechHawaii.com and TechJobsHawaii.org mailing list and receive weekly highlights on Hawaii technology industry news and events, and notices of newly posted jobs from the TechJobsHawaii.org website.



Tech Jobs Hawaii and www.techjobshawaii.org

Seven years ago, when Hawaii's growing technology industry needed to connect with technologically skilled employees, the Tech Jobs Hawaii Consortium formed and created TechJobsHawaii.org to provide a no-cost, direct connection between job seekers, interns and employers. HTDC developed the original site, and continues to maintain and enhance the website to build awareness of Hawaii's technology industry and the opportunities it offers for skilled employees.

The 8th annual Holiday Science & Tech Fair will be held on December 28, 2007.

HTDC.org

HTDC.org provides information about HTDC's programs and services as well as statewide conference room reservation access to HTDC clients.

In 2008, we will be launching new versions of our web sites to better serve the tech community. The sites will be cleaner and easier to use.

EVENTS

2007 Technology & Internet Expo

HTDC joined Oceanic Time Warner Cable and PacificNews.net in sponsoring this Business to Business expo that offered technology companies including HCATT and HTDC client, Oceanit, a showcase for their high-tech innovations. The expo took place at the Neal Blaisdell Exhibition Hall on Oahu on March 31 and continued on Maui on May 11.

Science & Tech Day at the State Capitol

HTDC participated as an exhibitor on April 3. The event was an opportunity for the technology industry to connect with lawmakers, their staff and the public. Companies came away with a better understanding of how legislation can have a positive impact on their industry and how the industry can work with lawmakers increase high-quality, high-paying technology jobs in Hawaii. Approximately 50 companies and organizations exhibited. HTDC staff provided information on its various programs such as the SBIR grant assistance program, the statewide incubation program, workforce development outreach through www.techjobshawaii.org, and HTDC's client successes. Exhibitors included HTDC clients, Pipeline Communications and Technology, Sopogy, and Zero Emissions. Also in attendance were HTDC graduates, 21st Century Systems, NovaSol, and Oceanic Imaging Consultants. HTDC staff met Rep. Gene Ward, Rep. Kyle Yamashita, Sen. Carol Fukunaga, Rep. Kirk Caldwell, Sen. Willy Esperero and staffers from Sen. Mike Gabbard's and Rep. Jon Riki Karamatsu's offices.

Hawaii State Science & Engineering Fair

HTDC participated as an exhibitor on April 4. This year marks the 50th anniversary of this event that encourages and inspires students to pursue science and engineering careers. Approximately 1,000 students attended the public viewing of projects on April 4. HTDC staff talked with teachers and students to educate them about HTDC's job and resume placement website at www.techjobshawaii.org. Efforts to nurture the skilled workforce was discussed as being essential to the growth of Hawaii's technology industry. Teachers and counselors also requested HTDC's assistance in securing speakers for career day presentations in their schools. Other exhibitors included HTDC clients, Pipeline Communications and Technology, Sopogy, Oceanit, as well as Rapid Technology, BAE Systems, Institute for Astronomy, Women in Tech, NOAA and Sprint. Besides the science fair entries, there was also a SkillsUSA competition in graphic arts, multimedia presentation, construction, cabinetry, woodworking, robotics, bridge building, automotive refurbishing, and Internet networking.

Careers in Science & Technology: STEM Excursions

HTDC's Sandy Park facilitated a tour of three local technology companies for eight high school and college students on June 27. The group toured Oceanit Laboratories/Hoana Medical, Archinoetics and Blue Planet Software.

The students viewed a presentation on Oceanit's diverse products and services. Cindy Matsuki, Marketing, and Dan Kinoshita, IT Solutions Manager, then gave the students a better understanding of the Oceanit's workforce needs and how the students can become a part of the company's team.

The Hoana Medical team showed the students their LG1 coverlet for hospital beds which measures a patient's heart and respiratory rate.

Dr. Traci Downs and Evan Rapaport of Archinoetics showed the group how integrating brain function and technology can bring about new and innovative ways to help the disabled, and how human fatigue can be monitored for improved performance. The students were enthralled with ArchiBot, a robot that greeted them and gave them a video presentation of Archinoetics products and services on his DVD Tummy.

Blue Planet Software was the group's inspiring last stop. The students were in awe of Mr. Minoru Arakawa, former President of Nintendo USA. Mr. Arakawa spoke to the students about his career with Nintendo and the innovations created while he was there. As President of the new Tetris On-Line, Mr. Arakawa's team includes executive producer Peter Ryu. Peter took the students on a tour of the Blue Planet Software headquarters. They were excited to watch the game testers play Tetris on huge screens. The Tetris On-Line developers showed the kids how they develop the animation, sound and programs for the game and aesthetics for the background screens. As the kids put it, "It was totally cool."

The tour was just one way that HTDC connects the disparate elements of Hawaii's technology community to help create the critical mass necessary to drive our state's innovation economy forward.

Building the Buzz: Myths and Magic of Technology Marketing Workshop



HTDC partnered with the Pacific Business News to offer this workshop on June 28, 2007, for tech companies and the industry. Yuka Nagashima from HTDC moderated a panel consisting of Lynette Lo Tom of Bright Light Marketing, Ian Kitajima of Oceanit and Harold Nagato of Environmental Waste Management Systems. The panel presented innovative ways to help companies market themselves as they grow. The event was sold out for a week with over 60 attendees filling the room at the Hilton Hawaiian Village Coral Ballroom II. Attendees were also invited to attend the Business Leader of Hawaii kickoff event sponsored by Ernst & Young following the workshop.

Incubation Programs

Tech Centers

HTDC's incubators—the Manoa Innovation Center (MIC) near the main research campus of the University of Hawaii, the Maui Research & Technology Center (MRTC) in Kihei, and the Hawaii Innovation Center at Hilo (HICH)—are settings that promote the continuous exchange of meaningful ideas, information and connections to nurture and assist new and early-stage entrepreneurial ventures in creating their own success.

Each incubator provides:

- short-term leases;
- access to business facilities and equipment (offices, copiers, mailboxes, conference rooms);
- internet access;
- ample and affordable parking;
- business mailing addresses;
- client-centered business workshops;
- networking events;
- referrals to private sector business experts and service providers; and
- business reviews (covering marketing, financing, business planning, and organizational growth & effectiveness).

Since its inception in 1992, MIC's cumulative success rate has been 75%, meaning 75% of all MIC client companies were viable businesses at the time of graduation. Comparatively, the Small Business Administration finds that only 44% of small businesses survive at least four years. MIC's success rate demonstrates its effectiveness in nurturing small businesses and increasing their odds of business success within the critical early years of business development.

Virtual Incubation

HTDC's statewide Virtual Incubation Program allows seed and early-stage tech companies that do not require, cannot afford, or are waiting for a suitable physical office space (as HTDC cannot guarantee vacancies at all times) to have access to all HTDC incubation common area facilities, services and programs for a nominal \$100 monthly fee. Since the program's inception in 2004 under an Economic Development Administration (EDA) grant, 36 new start-up companies have participated, 87% have graduated successfully, and many have become physical tenants at MIC. Four new companies joined the program during the first six months of 2007. HTDC will be implementing a strategy to better support the neighbor island communities via the virtual incubation program, where assistance is not widely available.

Early-Stage Company

We refer to companies in the second stage of development as Early-Stage companies—when a company with a new, innovative product or service idea begins to “take root” and grow.

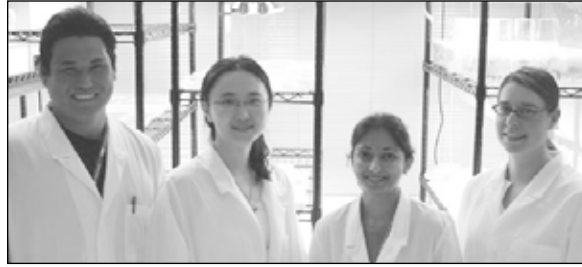
Kuehnle AgroSystems Co. LLC

In 2001, Heidi Kuehnle, already one of the world’s leading experts on anthuriums, and an Ornamental Breeding and Genetics professor at the University of Hawaii, won a federal SBIR award for “Magnetophoresis as Novel Means for Transgenesis” and visited MIC to present her application for a Hawaii SBIR Matching Grant. She was looking for a good setting to perform her research in magnetophoresis, which evolved around a process that addresses the shortcomings of existing macromolecule transfer technologies used for medical, agricultural and aquacultural applications. She became a MIC tenant in 2002.



Heidi Kuehnle

Kuehnle AgroSystems also conducts biotech R&D of plant-based systems for production of biologically active compounds to demonstrate the technical feasibility of producing dietary supplements and animal feed, using natural sources such as microalgae, rather than chemical



Scientists Tamotsu Hirai, Jie Yang, Vasumathi Kode, and Jill Stokes, in front of Kuehnle AgroSystems’ tissue culture racks

synthesis from petrochemicals.

Kuehnle AgroSystems has won four federal SBIR Phase I awards totaling over \$300,000, Hawaii SBIR Matching Grants of nearly \$100,000, and an outstanding three (out of four Phase I projects) SBIR Phase II awards totaling over \$1.5 million.

In April, Kuehnle was one of three local experts on a Hawaii Science and Technology Council panel presentation that described key biotechnologies that are being applied in Hawaii, why they are safe, and key challenges to success, creating opportunities that are tied to the economic and sustainability aspirations we all have for our state. She participated because of her collaboration with HR Biopetroleum, a Hawaii-based firm looking to develop biodiesel production using microalgae grown in seawater ponds.

The HTDC-MEP program has been assisting Kuehnle AgroSystems with price point analysis, market research, and venture capital proposal writing to prepare the company’s transition from performing research to commercializing that research into viable, successful products.

2007 Legislative Highlights

More innovation related bills were introduced for the 2007 legislative session than any other, spanning multiple disciplines from education to workforce development. HTDC tracked over 70 bills, 25 of which we actively supported or provided comments for. We would like to thank the legislators who took the time to hear the needs of the industry in considering these policies and fund appropriations.

Successful bills include:

- Innovation in Education bills for experiential learning for Science Technology Engineering and Math (STEM) education: First Academies, HiEST Academies, Robotics, Project East, STEM teacher recruitment and training, and business internships,
- Innovation in the Economy bills: home for Academy of Creative Media, Innovation activity monitoring/metrics, MELE, Kakaako Life Sciences project, Office of Aerospace Development, Dual Use follow-on funding,
- Workforce Development bills: some funding to start workforce education alignment, Rapid Response Training programs, and Kamaaina Come Home activities.

Kuehnle AgroSystems Co. LLC - Q & A

Q Can you tell us a bit about how you got into your industry?

A We got started doing contract research based around our first patent (my father and I are co-inventors). This led to data that we used for our very first SBIR grant application, which was successful.

Q Please tell us about your company and what it does.

A We are a life sciences company that uses aquatic plants for high-value compound production.

Q Please tell us about your initial contact with HTDC, what value you saw that caused you to become a tenant/participant.

A I seem to recollect that our initial contact was through Janice Kato at MIC for the SBIR Program. The value for us was having an air-conditioned wet lab space (i.e. a room with a sink, and windows for light for the plants). We needed this for a stable research environment not possible in the home garage.

Q How has HTDC helped your business? What were some of the most significant, memorable ways?

A So many opportunities opened up. Probably one of the earliest and most significant was becoming 'legitimate' for moving into the State innovation incubator facility. This exposed us to many business seminars, mentors, other start-ups, and gave access to meeting rooms and a professional ambiance.

HTDC certainly nurtured the company as it transitioned from the R&D mode of thinking to commercialization-driven thinking. We had help on the business plan, on accounting, on legal issues, on legislative issues, connecting with commercialization services, personnel reviews—all basics for growing a company.

Q How did the Hawaii SBIR matching grant program help your company, and why should the State continue funding it?

A The State matching SBIR grants program allowed us to cover some IP expenses, which led to more SBIR grants. Also, we never charged overhead on the early grants (all the money went into the R&D) so having a bit of rent money that first year was terrific.

“HTDC certainly nurtured the company as it transitioned from the R&D mode of thinking to commercialization-driven thinking.”

Q What more could HTDC/the State do to assist innovative businesses like yours?

A Build a wet-lab incubation facility. Keep up the State tax incentives focused on High-Tech and Energy. Lobby the INS or congressional reps to make it easier for us in Hawaii to hire and keep skilled researchers on visas. Lobby the HDOA for reasonable and efficient organism import rules coordinated through the UH possibly—their current moratorium severely impacts the State's business R&D efforts.

Q What's your opinion on ACT 221/215?

A Good for stimulating innovation companies because of the handling of taxes on royalties/licenses that is common in many other high-tech States like Massachusetts. The tax/equity swap component for investment is less important actually.

Q What are the 3 biggest mistakes people make when starting their own business and what do you suggest for them to overcome these mistakes?

A Things I would do better next time is find the money to hire a professional accountant right from the beginning, set up an advisory board sooner for the LLC, and find the money to do market research and financial projections for the biz plan by a professional or by MEP.

Q What was your biggest business challenge and how did you overcome it?

A A lack of business experience was overcome with lots of help from the State, Enterprise Honolulu, HiBEAM, MIC, HTDV, all the people here in Hawaii to whom we have had access.

Q Are entrepreneurs made or born?

A Can you choose to be crazy? ☺

Q Who was your mentor(s)?

A My Dad, the other company partners and a potential investor. But also the investment and business development community here in Honolulu have provided mentoring nuggets that are invaluable.

Q How did you obtain financing?

A Self for starters.

Q How did you develop your business skills?

A Learn by experience, listen to professionals.

Q Any advice for today's young business person?

A If your passion is there then you can make it succeed.

Hawaii Center for Advanced Transportation Technologies

Hawaii Center for Advanced Transportation Technologies (HCATT)

HCATT's mission is to be a catalyst for zero emission vehicle advances in Hawaii. It



is currently working with the U.S. Air Force Advanced Power Technology Office (APTO) to develop advanced alternative fuel vehicles and supporting infrastructure for evaluation at the National Demonstration Center at Hickam Air Force Base (AFB). These efforts are aimed at production and commercialization of advanced transportation technologies with military and commercial applications. Hickam has become the Air Force leader for use and application of hydrogen fuel cell powered vehicles and equipment.

HCATT delivered a fuel cell/battery powered hybrid electric bus in 2004, followed by a fuel cell/battery powered hybrid electric step van in 2005, and then by a fuel cell/battery powered hybrid electric aircraft towing vehicle in 2006. All three vehicles use gaseous hydrogen compressed at 5000psi for fuel. These vehicles are the beginning of a fuel cell vehicle fleet that HCATT will continue to develop for demonstration at Hickam AFB. Also in development are a fuel cell augmented flightline maintenance support vehicle

design. This concept allows for changing of components as technology improves or hydrogen demand increases, and for transporting components by air to support forward deployed forces worldwide. The station produces hydrogen through electrolysis of water, compresses it to 5000psi, and stores it for dispensing into vehicles. It is the first of its kind in DOD and the first hydrogen vehicle fueling station in Hawaii.

Although fuel cell vehicles are a major focus, HCATT is also developing other alternative fuel technologies.



A hybrid electric dump truck was delivered to Hickam AFB in 2007. Scheduled for delivery in early 2008 are an all-battery powered step van, using lithium batteries, and a plug-in hybrid electric drive step van, using an electric

motor and diesel engine. These two vans will undergo comparison testing along with the fuel cell step van to evaluate the efficiencies of alternative drive and fuel systems in a common vehicle.

HCATT is also collaborating with the Hawaii Natural Energy Institute at the University of Hawaii to evaluate lithium-ion batteries for vehicle applications and additional hydrogen fuel cell powered vehicles for demonstration in Volcanoes National Park. As Hawaii and the rest of the country move toward



and a fuel cell powered light cart using metal hydride storage for its hydrogen fuel supply.

A major accomplishment by HCATT in 2006 was the development and installation of a deployable, modular hydrogen production and fueling station at Hickam AFB to support the operation of present and future fuel cell vehicles. This station produces up to 50kg of hydrogen per day on-site and is unique because of its modular and deployable

the vision of a hydrogen-based economy, with clean

air and abundant energy, HCATT initiatives accelerate the development of these emerging technologies to help make the vision a reality.



Hawaii Small Business Innovation Research (SBIR) Program

The federal Small Business Innovation



Hawaii SBIR

Research (SBIR) program stimulates research and development activity throughout the country. The SBIR program provides funding for promising, though untested, ideas whose success is too uncertain to attract private investment from banks, angel funds or venture capitalists. The SBIR program accepts the risk that some of these innovations may not pan out because it is more often rewarded with technologies that meet the country's critical needs. In Hawaii, HTDC educates the technology community about the SBIR program and how it can help companies develop and commercialize their innovations and technologies.

There are 11 federal SBIR agencies: the Departments of Agriculture, Commerce, Defense, Education, Energy, Health & Human Services, Homeland Security, and Transportation; NASA; the National Science Foundation; and EPA. They award over \$2 billion to U.S. small businesses annually.

These agencies regularly announce their most urgent needs, companies throughout the country submit their solutions, then agencies pick the one they like best. The agencies make a "Phase I" award of up to \$100,000 to that company to explore the feasibility of its solution. If the agencies like what they see, they invite the company to apply for a "Phase II" award of up to \$1 million for prototype R&D and a commercialization plan. In "Phase III" the company secures funding from industry or other non-SBIR sources to commercialize their innovation.

The State of Hawaii, through the HTDC Hawaii SBIR Matching Grant Program, provides up to \$25,000 to each Hawaii Phase I awardee so they can better compete for Phase II awards. The State's goal is to aid each awardee's chances for commercial success, encourage R&D activity, create high quality jobs, and boost Hawaii's economy.

In FY 2007, the Hawaii SBIR matching grant program awarded \$460,000 to 10 local companies that won 19 federal SBIR/STTR Phase I awards worth \$3.7 million and three Phase II awards worth \$2.5 million. Over the last 18 years, 66 Hawaii companies won 287 SBIR/STTR awards worth over \$68 million, received \$4.4 million in State matching grants, created hundreds of high quality, high paying jobs, and attracted more than \$58 million in Phase III funds. For every State dollar invested in the program, Hawaii companies attracted over \$15 in federal SBIR funds or over \$28 when Phase III dollars are included.

"Over the last 18 years, 66 Hawaii companies won 287 SBIR awards worth over \$68 million"

Hawaii SBIR Matching Grant Awardees, July 2006 – June 2007

(*first ever SBIR awards)

Archinoetics (Honolulu) Army Aviation & Missile Command: "Field-Programmable Automation System (F-PAS)"

Innovative Technical Solutions Inc. (NovaSol) (Honolulu) Air Force Research Lab: "PICC (Panchromatic Image Chip Classifier)"

Innovative Technical Solutions (NovaSol) (Honolulu) Air Force Research Lab: "Advanced Signature-Matched Hyperspectral Change Detection"

Kamuela Greenhouse/Specialty Orchids* (Kamuela) USDA: "Converting Locally Collected Waste Plastics into a Clean, Durable Orchid Growth Medium"

Navatek Ltd. (Honolulu) Navy: "Dynamic Compensation System for Towed Bodies"

Navatek Ltd. (Honolulu) Navy STTR: "Development of Lightweight and Low Cost Advanced Structural Materials for Off-Board Surface Vessels (OBVs)"

North Star Scientific Corp.* (Kapolei) Navy, NAVAIR: "L-band Solid-State High Power Amplifier for Airborne Platforms"

Onomea Scientific LLC (Papaikou) NOAA (National Oceanic & Atmospheric Administration): "A Prototype Net Cleaning System for Open-Ocean Aquaculture Cages"

PanThera Biopharma* (Aiea) NIH, National Institute of Allergy & Infectious Disease: "Optimization of Small Molecule Botulinum Neurotoxin Inhibitors"

PanThera Biopharma* (Aiea) National Institutes of Health: "Discovery of West Nile Virus Protease Inhibitors"

Referentia Systems Inc. (Honolulu) Air Force: "Assessing Space and Satellite Environment and System Situations (ASSESS)"

Referentia Systems Inc. (Honolulu) Office of Naval Research: "Interactive Dimension Reduction and Extraction of Maintenance Information in a Dynamically Reconfigurable Aircraft Database"

Referentia Systems Inc. (Honolulu) Office of Naval Research STTR: "Automated Asymmetric Red Teams"

Technical Research Associates Inc.* (Honolulu) Dept. of Energy: "Software Tools for Full Spectrum Analysis of Hyperspectral Data"

Trex Hawaii LLC (Kahului) Air Force: "High Efficiency Extremely High Frequency (EHF) Power Amplifier"

Trex Hawaii LLC (Kahului) Navy, NAVAIR: "Wideband Transmitter for Electronic Aircraft Attack"

Trex Hawaii LLC (Kahului) Navy, NAVAIR: "L-band Solid-State High Power Amplifier for Airborne Platforms"

Trex Hawaii LLC (Kahului) Army Aviation Applied Technology Directorate (AATD): "Integrated Infrared and Millimeter-wave Imaging System"

Trex Hawaii LLC (Lihue) Missile Defense Agency: "Volume, Near Net Shape Manufacturing of Chemical Vapor Composite Divert & Attitude Control Systems (DACs) Nozzles"

Mid-Stage Company

We refer to companies in the third stage of development as Mid-Stage companies. They have existing successful products or services and are seeking opportunities to grow by developing a new, innovative product or service, by expanding into a new market, or by increasing productivity or effectiveness. Environmental Waste Management Systems is such a company, already successful in its own right and looking to expand into new markets to make a bigger difference in our world.

Environmental Waste Management Systems

In 2002, Harold Nagato's Environmental Waste Management Systems (EWMS) was one of four young technology firms in HTDC's Pre-Seed Technology Review Forum to present its business plan to planning consultants, investors and industry experts, to be critiqued, and receive suggestions on how to attract outside investment.

Prior to the forum EWMS, which developed and manufactures ESIS (Environmental Sewage Innovative-treatment System), an innovative, modular, transportable wastewater treatment system that is safer and more efficient than traditional septic tanks and cesspool systems, "... [we] probably put only two units together a year. Our initial goal was like two a month. Before, we would get one call and get excited," remembers Nagato. He says they would be so excited that he would close the office early to celebrate.

"We invested a lot of money, blood, sweat and countless unpaid hours, days, months and years on this crazy dream," says Nagato. With the help of organizations such as HTDC, ESIS began to gain attention and customers. Nagato and daughter Allison attended HTDC meetings to discuss ESIS, and learned more about developing innovative technologies in Hawaii. EWMS became a tenant of HTDC's Virtual



Incubator, and ESIS and Nagato were featured on the local TV show *Flavors of Technology*. In June, Nagato was a panelist at the Pacific Business News/HTDC "Building the Buzz" marketing workshop. "I consider HTDC my virtual PR consultants," he said. "They're always introducing you to people; they've also recommended us or nominated us for community awards. I wouldn't have had the exposure or the pluses if it wasn't for them."

By 2005, EWMS had gross sales of over \$1 million. In its first 10 years, EWMS sold about 100 ESIS units. In 2005 alone, EWMS sold another 100 units.

In Hawaii, there are about 185,000 cesspools and 4,500 septic tank systems in the ground. Many of them are either performing poorly or have failed completely, allowing untreated or partially treated effluent to flow directly into our water sources. Much of our centralized sewer system is 20-50 years old, very expensive to maintain, and breaking down, leading to discharge of untreated waste directly into our bays, streams, and waterways.

With enforcement of the EPA's recent ban on Large Capacity Cesspools, the need for environmentally friendly systems grows more important every day. ESIS is a UH-tested and validated alternative solution that meets or exceeds all EPA and other government standards. In fact, it produces water clean enough to bathe in, according to EPA standards.

"But I don't recommend it," Nagato said, laughing. "I would say you could wade in it or wash your car with it."

The good news is that many will soon have a chance to decide what to do with the water from ESIS, as EWMS begins to fill a large order from the Big Island, orders from Guam, the Philippines, Jamaica, France and Samoa, and dozens of smaller projects throughout Hawaii. To accommodate an already fourfold increase in orders, EWMS has started manufacturing its fiberglass tanks in Vietnam, and is preparing assembly plants on the neighbor islands and in Guam for projects there. The future is bright for this little company as the world begins to discover its big-time innovation.

EWMS Q & A

Q *Can you tell us a bit about how you got started?*

A Over a dozen years ago I encountered a land developer's nightmare of wanting to develop land into residential lots but finding out that sewage facilities were not available nor would they be available for quite some time. I assessed the situation and sought out alternative solutions. My understanding of what was needed to address the problem led me to find a solution that is now the ESIS system. ESIS is a modular on-site wastewater treatment system that is an environmentally superior system to cesspools and septic tanks and fills the void where no centralized system is available or is already at maximum capacity. It is a single modular unit system that is delivered directly to the site. And because it is modular, additional capacity can be added or removed as the need changes over time. There are many areas throughout the islands and all over the world not serviced by a large municipal or central system. These areas have had to rely on cesspools and septic tanks resulting in decades of environmental pollution to our water resources.

The ESIS system addresses these problems associated with existing systems: 1) Cesspools and Septic tanks are polluting our resources; 2) Many municipal and central systems are in need of millions of dollars for repairs; 3) Existing systems are already 30 to 75 years old and maintenance is costly; 4) The costs to build new systems, including needed infrastructure amounts to millions of dollars; and 5) When a central system breaks, an entire community suffers. ESIS is solving many of these problems today.

The ESIS system is compact and can be shipped anywhere in the world and assembled near the installation site. And unlike other existing systems, installation, operational and maintenance costs are much lower.

Q *Please tell us briefly about your company and what it does?*

A Environmental Waste Management Systems, Inc. (EWMS) is a Hawaii based company providing innovative and economical solutions for the environmentally safe treatment and recycling of wastewater. Backed by a decade of research, development and dedicated partners, EWMS is now manufacturing and marketing its patented on-site treatment system called ESIS (Environmental Sewage Innovative-treatment System). ESIS has successfully fulfilled a niche segment of the wastewater treatment market by providing alternative solutions to private developers, government agencies, and individual home and business owners when other conventional and more expensive treatment systems are not feasible. The success of ESIS has created new business opportunities both in and beyond Hawaii.

As a small business person, success is often elusive. To succeed, one has to be willing to make personal, family

and financial sacrifices ... all with no assurances of success. Nonetheless, those with a passion and commitment have a better chance at succeeding. I founded EWMS 12 years ago as a one-man business out of my garage. From these very humble beginnings and with the tenacity that was needed to overcome many disappointments that would follow, I persevered. My personal financial sacrifices were needed to keep the company moving forward and after over a decade of surviving in business, I am now beginning to realize the fruits of my labors. There is still a long way to go but surviving the first 12 years has made me wiser and better prepared to position the company to successfully explore national and international opportunities.

Q *Please tell us about your initial contact with HTDC, what value you saw that caused you to become a tenant/participant?*

A As a small business, our financial and manpower resources were very limited. We realized early on that a critical component to our success would be the ability to "get the word out" about our system and this became a real challenge without a set advertising and public relations strategy. We were introduced to HTDC by Senator Daniel K. Inouye's office and became a virtual tenant with access to their creative and experienced staff. Their understanding of the day-to-day challenges facing a small business and their experience that we needed to focus on both the present and the future, gave me an appreciation for what they could offer me. HTDC allowed us to utilize their facilities for meetings, arranged for us to meet with industry experts in the area of business planning and marketing, set-up seminars and educational workshops, and put us in contact with business contacts that have proven to be invaluable.

Q *How has HTDC helped your business? What were some of the most significant, memorable ways?*

A HTDC's Virtual Incubation Program allowed us to get needed assistance early on, while still allowing us to maintain our autonomy. Certain services like the use of the conference rooms, attending seminars and workshops with low fees or at no charge, really helped when we could not otherwise afford to pay for these types of services. They also provided continued encouragement and workshops on business planning, licensing, accounting and marketing.

There are many organizations trying to assist small businesses. But HTDC is the only one that I know of that has continued to provide their support just as they have from the very beginning. Even though we have weathered the storm that many small business fall victim to in the early stages of being in business, we still look to HTDC for assistance and guidance.

See the full Q & A at <http://www.htdc.org/2007annualreport>

With existing successful products, this next Mid-Stage company constantly sees opportunities to develop new, innovative human performance products and improve our quality of life.

Archinoetics

Traci and Hunter Downs worked for local technology company NovaSol when it was located at MIC in 2001, and returned often to present the company's Hawaii SBIR Matching Grant applications. They spun Archinoetics off from NovaSol in March 2005 to pursue their interests in human performance research, development and products. NovaSol's focus was, in general, on optical systems, so the parting was logical and amicable. At Archinoetics, Traci, a neuroscientist, and Hunter, a medical physicist, continued the human performance R&D work they had started while at NovaSol, along with four other NovaSol employees.

Over the past two years, Archinoetics has won five federal SBIR awards for nearly \$500,000 and Hawaii SBIR Matching Grants of nearly \$100,000. It is clear that Archinoetics—"archi" meaning first or original, and "noetics" meaning the science of the intellect or pure thought—enjoys a wealth of original thought. What distinguishes the company is that it always has an eye on how its R&D can be developed into marketable products. Indeed, Archinoetics has already spun a new company called Sleep Performance Inc. that offers products and services to assist individuals and companies in analyzing the impact of sleep problems and fatigue on performance.

"We want to move from being a contract-driven company to a product-dependent company so we can be a lot more self-sufficient, so that we have a base line of product development and placement that we can capitalize on," says Traci. Government clients include the Defense Advanced Research Projects Agency and the Army's Medical Research and Material Command. Private-sector clients include Microsoft, Boeing and Lockheed Martin.

Traci says she wants to eventually hire about 30 to 40 employees. They recruit locally, often participating in HTDC's Technology Expos and Holiday Tech Fairs, and are confident that there is plenty of talent in the islands. The intellectual work can be done anywhere in the world, yet Traci and Hunter feel an attachment to Hawaii and want to base their business here. There is no doubt that this talented team and company will prosper in Hawaii for many years to come.

Archinoetics Q & A

Q *Can you tell us a bit about how you got into your industry?*

A Hunter and I both got into our field through the application of our graduate degrees in Medical Physics (Hunter) and Neuroscience (Traci). We met and worked together while Hunter was in graduate school and have moved from academics to industry to owning our own companies.

Q *Please tell us briefly about your company and what it does?*

A Archinoetics is a small, Hawaii-based high tech company that focuses on the research and development of human-centered technologies. Our current research and development projects include functional brain imaging systems, human fatigue and performance monitoring devices and software, intelligent algorithms based on genetic programming and biometric sensors, and neurobiologically inspired computing platforms.

Q *Please tell us about your initial contact with HTDC, what value you saw that caused you to become a tenant/participant?*

A Prior to starting Archinoetics, we worked for NovaSol, a local technology company that started out in the HTDC incubator program. When we first moved to Hawaii in 2001, our offices at NovaSol were located in the Manoa Innovation Center. The services that HTDC provided to NovaSol were instrumental in its success. As an independent spin-off of NovaSol, we have remained involved with the resources of the HTDC.

Q *How has HTDC helped your business? What were some of the most significant, memorable ways?*

A HTDC has been critical to Archinoetic's success. From support in the SBIR matching program to the visibility and promotion that HTDC provides Archinoetics to nomination for the Tibbetts SBIR award, it cannot be overstated how fundamental HTDC is to our success and growth.

Q *How did the Hawaii SBIR matching grant program help your company, and why should the State continue funding it?*

A This matching program has been essential to Archinoetics' SBIR success. We have won numerous Phase I awards, moved four SBIRs to Phase II, and one to Phase III. The funding the HTDC SBIR matching program has provided has allowed us to hire interns to add additional work to the Phase I programs, has provided travel funds to allow for additional team members to meet with program managers in Washington, DC, and has supported "uncovered" expenses which have allowed us to bridge the distance between Honolulu and the east coast. We are greatly indebted to this program and hope to support any measure which will keep it in existence and grow its impact.

See the full Q & A at <http://www.htdc.org/2007annualreport>

HTDC-Manufacturing Extension Partnership Program

HTDC-Manufacturing Extension Partnership Program (HTDC-MEP)

MEP is a federal program funded by the Department of Commerce, National Institute of Standards and Technology (NIST). The MEP program in Hawaii has been hosted by HTDC for the last 4 years, and is part of a national network of 350 MEP centers nationwide that are transforming manufacturers to compete productively, effectively and globally. The MEP program provides services including lean manufacturing training and implementation, value stream mapping, growth strategies, product development consulting, financial analysis, marketing, entrepreneurial training, family business planning, export readiness training and energy efficiency planning for new manufacturing businesses. As a program aligned under HTDC, HTDC-MEP shares a common goal to support the development and growth of Hawaii's commercial high technology industry.

HTDC-MEP offers the latest tools available to train Hawaii manufacturing companies to become more profitable and able to compete with larger companies on the mainland. MEP provides low-cost, one-on-one assessments for each client's needs and technical assistance to help companies learn how to apply leading edge technologies and business streamlining techniques.

Most of Hawaii's manufacturing businesses are small due to resource and geographic constraints. Smaller manufacturers can compete in the global economy by lowering their costs. Two of the most significant and common factors among Hawaii's small manufacturing businesses are a lack of knowledge about how their existing business processes limit their productivity, and about how their lack of access to affordable and high quality business counseling limits their potential for growth and improvement. Results from NIST MEP centers across the country have shown that businesses that practice the core concepts of MEP such as "lean manufacturing" are better equipped to improve their productivity and bottom line performance in a competitive market. Because of Hawaii's geographic remoteness, it is important for local companies to be able to access a network of consultants nationwide in the very specialized areas of

commercialization and manufacturing.

HTDC receives approximately \$437,066 of federal funding to operate the MEP program in Hawaii, providing manufacturing and small business consulting, MEP program administration and overhead. HTDC matches these federal funds with approximately \$874,000, a combination of revenue from MEP fees for service, the in-kind value of HTDC staff and partner time contributing to the MEP program, and the value of the overhead HTDC allocated to the MEP program. MEP's attachment to HTDC became more fruitful and strategic this year after NIST MEP began to focus on growth through great innovation as a critical component of the traditional manufacturing value stream. We formed a strategic relationship between HTDC's MEP and Small Business Innovation Research (SBIR) programs, enabled by HTDC's core competency in providing SBIR technical assistance.

MEP complements HTDC's SBIR assistance program by helping to accelerate innovative products to market. MEP assists Hawaii SBIR award-winning manufacturers through the commercialization phases of their projects. The assistance includes proposal writing, finding strategic partners, supply chain development, developing manufacturing strategies, scale-up, project management, market research, business plan development, financial projections, industry certification, pursuing venture capital to accelerate speed to market, and to increase likelihood of success during product launch. Given this close partnership, HTDC-MEP is able to provide an opportunity for many of Hawaii's businesses to receive affordable consulting in their very early stages through product commercialization, where significant revenues and job creation can be realized.

HTDC-MEP Metrics (January – June 2007):
MEP clients reported the following numbers as a result of HTDC-MEP assistance:

- Cost savings, avoidance of unnecessary investments: \$1,540,000
- Increase in sales and retention of sales: \$4,893,000
- New investments in plant or equipment, information systems or software, workforce practices or other areas of business: \$2,673,500
- Number of clients served: 130

Although HTDC focuses on helping Hawaii technology companies succeed, our Manufacturing Extension Partnership (MEP) program consultants can help almost any Hawaii company improve its productivity and effectiveness. With MEP's help, this early-stage company to become much more efficient and profitable.

Plant Research Corporation

Lean Production of Sugar Cane Swizzle Sticks

The HTDC-MEP (Manufacturing Extension Partnership) program helped the Plant Research Corporation (PRC) to expand its manufacturing capacity this year. PRC markets and produces sugar



cane Swizzle Stick products. The sugar cane products are used in a growing number of food applications, recipes, and drinks, both at home and at restaurants. PRC employs about 15 people at the small manufacturing facility to make various sugar cane products and at a sugar cane farm in Waimanalo.

PRC was able to produce about 40,000 units per month. In the long term, PRC wanted to expand its capacity to 1,000,000 units per month. In the short to medium term, PRC wanted to improve its capacity with existing equipment and minimal capital expenditures.

HTDC-MEP Project Manager, Frank Chan, implemented "lean manufacturing principles" to help PRC improve its throughput. A current value stream map was created to illustrate the material and information flows throughout the operations and to identify potential opportunities for improvement and elimination of waste. After interviewing staff and applying lean manufacturing concepts, a future state map was developed that provided a road map to improving throughput. HTDC made the following suggestions:

1. Change the plant layout for material flow improvement and elimination of wasted motion, overproduction and transportation;
2. Standardize work procedures to improve quality and variability;
3. Cross-train staff to improve flexibility;



4. Point-of-use storage to reduce wasted motion;
5. Visual management to improve communication of objectives, quality and organization;
6. Process redesign to increase value added activities and reduce non-value-added activities; and
7. Add inexpensive capacity increases at the bottleneck operation.

The HTDC-MEP project improved PRC's throughput and increased its sales by over 250%. Process lead-time improved by 5%. Scrap rate and quality improved through the use of visual management tools. Also, as a result of the consultations, the company received enough data and information to proceed with confidence in making a large investment in manufacturing equipment totaling nearly \$1 million.

"The PRC management team is extremely pleased with the progress and looks forward to more training for employees in 5S, Total Preventative Maintenance, Lean Manufacturing & Office and implementing more projects. In particular, PRC is eager to integrate lean manufacturing principles into the forthcoming high capacity plant which will ensure a successful launch of the new plant and speed up the ramp up time," says Kevin Andrews, President of PRC.



When innovations are developed, prototyped, manufactured and finally ready for sale, there is often a need to improve production efficiency to give these innovations a better chance to succeed. HTDC-MEP contributes to Hawaii's growing Innovation Economy with its ability to help Hawaii's innovative small-to-medium-sized businesses add new efficiencies to their operations, reduce costs and increase the profitability they need to grow and prosper.

Mature Company

We refer to companies in the fourth stage of development as Mature. A mature company has the experience, funding and inspiration to continue to reinvent themselves through innovation.

TREX

Trex Enterprises Corporation (Trex), is a diversified high-technology company specializing in cutting-edge technical solutions and products to improve performance across the electromagnetic spectrum. Trex has developed a strong base of proprietary technologies in microwave sensing, high resolution imaging, digital signal processing, applied optics and materials. Their fundamental business strategy is the development of dual-use technologies. Trex received U.S. government support for programs relating to the defense, homeland security and force protection needs of our Nation and allies.

Established in 1978 as Western Research Corporation, Trex operated in San Diego, California. From 1988 until 2000 they were part of the Thermo Electron Corporation (NYSE: TMO), a Fortune 400 company. In 2000, Trex employees bought ThermoTrex's R&D division and became Trex Enterprises Corporation. Today Trex is a privately-held company, with headquarters in San Diego, California and facilities in New Mexico, Hawaii (Honolulu, Kauai, Maui) and Massachusetts. Trex employs about 200 professionals.

In addition to new products and service solutions, Trex advanced the creation of new business ventures and subsidiaries through commercial incubation strategies

to address market needs. In Trex's first five years as an independent company, they have incubated six new ventures: Sago Systems, Inc., Loea Corporation, Ophthonix, Inc., e-Phocus, Inc., Silicon Kinetics, Inc., and more recently CrossFiber, Inc. All of these ventures backed with outside equity participation share several things in common: a major technology breakthrough with patented intellectual property, a business plan that identifies a large target market and a reasonable path to exploit the opportunity and the human and financial resources needed to meet specific goals. Trex is continuing to incubate new ventures at Trex Enterprises and are also receptive to partnering with other entrepreneurs.

Trex Hawaii, LLC is a wholly-owned subsidiary of Trex Enterprises Corporation whose regional headquarters is based in Maui. Formerly a tenant at the Maui Research and Technology Center, Trex outgrew its incubation and office space in 2004. The decision to move to a larger space helped to accommodate their business model which entails incubating new companies that specialize in commercial technology products. The Trex Maui division currently resides in a new building located in Kahalui. This 14,000-square foot, two-story facility is entirely leased by Trex. Loea Communications, Silicon Kinetics Inc., e-Phocus and CrossFiber (currently located at MRTC) are the subsidiaries companies that are being incubated locally.

In 2007, the Trex Hawaii Maui division won two HSBIR matching grant awards of \$15,000 each from HTDC. This local division has been awarded four Phase I awards and matching HSBIR grants since receiving their first Phase I award in 2006. Trex Hawaii LLC also received a \$150,000 SBIR Phase I award from the Navy to build a power amplifier that can be used in various military applications, particular in high-power and wideband communication systems.

*Some content taken from the Trex website:
<http://www.trexenterprises.com>*

Seven Ingredients for Innovation-based Economy and High Value Jobs:

1. Research base (federal labs, research universities)
2. Connection of ideas to the market place
3. Capital
4. Skilled workforce
5. Good physical infrastructure
6. Entrepreneurial culture
7. Quality of life

HTDC Client List

MANOA INNOVATION CENTER

(1/1/07-6/30/07)

CURRENT TENANTS

ADXPO: *remnant media exchange software*

ATCO Software, Inc.: *activity desk software development*

Blue Cliff, Inc.: *customization of Open Vista for the medical industry*



Manoa Innovation Center

ChipIn, Inc.: *ecommerce online social network*

Concentris, LLC: *wireless networking technology development*

GeoRecovery, Inc.: *decentralized landfill systems solutions*

GPNE Corp.: *mobile WiMAX development*

Hawaii Environmental Biosolutions, Inc. - *water treatment technology and development*

Hawaii Technology Development Venture: *ONR Grant Funding*

Ikeyzo, Inc.: *IT consulting/dvlp. of web application localization*

Kuenhle AgroSystems, LLC: *biotech: plant/animal*

Neurobehavioral Research Inc.: *data and research analysis on EEG and MRI imaging*

Pipeline Communications and Technology, Inc.: *advanced communication and decision support applications*

Produced By You.Com, LLC: *online multi player movie production platform*

Pukoa Scientific, LLC: *high speed real time signal processing software and hardware architectures*

Quantum Leap, Inc.: *collaborative software*

Research Corporation of the University of Hawaii (RCUH)
MIC Anchor

Hawaii Center for Advanced Communications (RCUH)

Hawaii Engineering Design Center (RCUH)

Institute for Astronomy, PanSTARRS Project (RCUH)

PSR (RCUH)

Special Projects (RCUH)

Sanjole: *WiMax test equipment development*

Technical Research Associates, Inc.: *hyperspectral and multi-spectral data analysis*

UH College of Engineering

UH Office of Technology Transfer and Economic Development (OTTED) MIC Anchor

UltraSpectral, Inc.: *software; geospatial information products and services*

Zero Emissions Leasing, LLC: *developer of large scale solar power generation projects*

MIC GRADUATES

Amagata U.S.A.: *software development*

MAUI RESEARCH & TECHNOLOGY CENTER

(1/1/07-6/30/07)

CURRENT TENANTS

Ambient Micro, LLC: *development of ambient energy solutions*

Clearwire, LLC: *wireless Internet service provider*

CrossFiber (Trex Subsidiary): *optoelectronics/R&D*

Maui High Performance Computing Center: *An Air Force Research Laboratory managed by UH, this supercomputing center provides more than 20,000 hours of computing time per*



Maui Research & Technology Center

year to the research, science and warfighter communities.

Maui Small Business Development Center (SBDC)

Mosaic Optical Laboratory (Oceanit): *designer and manufacturer of custom and proprietary optics*

Oceanit Laboratories, Inc.: *engineering, scientific and technical services*

Pacific Defense Solutions: *technology solutions with emphasis in electro-optical sensing and imaging applications*

Schafer Corporation: *lightweight optics for aerospace applications*

University of Hawaii (Classrooms)

MRTC GRADUATES

NBT 168 Technik, LLC: *travel and hospitality services*

HAWAII INNOVATION CENTER AT HILO

(1/1/07-6/30/07)

CURRENT TENANTS

ARA Wealth Management
Group: *financial planning services*

Robert Belcher, CPA: *accounting services for small businesses*

Hawaii Island Economic Development Board (HIEDB): *supports balanced, sustainable economic development in the context of broad community goals and objectives*

H2K Driver Training Services: *CDL and student/adult driver education*

Ted Hong, Attorney at Law: *law practice with an emphasis on employment law*

MailMining LLP: *hardware and software development solutions to improve email efficiency*

Pacific Pro Tech: *ISP Services, computer servicing, upgrading and networking installation*

Pat and Associates: *court reporting services to the public*

Pre-Paid Legal Services: *family, business, group pre-paid legal service programs*

VIRTUAL INCUBATION PROGRAM

CURRENT CLIENTS

3D Innovations LLC: *3D CAD training focusing on STEM programs*



Hawaii Innovation Center at Hilo

Competency Attainment: *technical writing services and safety/environmental training*

FinderElf.com, LLC: *search and directory service with price comparisons and a consumer ratings system*

GuideNet, Inc.: *software, database development, Internet*

Island News Technologies LLC: *professionally produced Maui weekly TV program*

Labels That Talk Ltd.: *developing playback of audio files on 2D medium*

Pacific Sun Energy, Inc.: *renewable energy*

Smart House Control: *design, systems integration, and proprietary solutions in the home automation field*

Sopogy, LLC: *concentrated Solar Power (CSP) technologies*

Williams Aerospace, Inc.: *developer and manufacturer of unmanned aerial vehicles*

XMLstar, LLC: *online software solutions and IT development projects*

VIRTUAL PROGRAM GRADUATES

Ambient Micro, LLC: *development of ambient energy solutions*

Applied Computer Electronics: *custom design custom microcomputer hardware and software instrument prototype developer*

UltraSpectral, Inc: *software; geospatial information products and services*

Hawaii Innovation Council

As part of the Hawaii Innovation Initiative, Governor Linda Lingle formed the Hawaii Innovation Council via Executive Order No. 07-01 to assist the State of Hawaii to sustain its rich and unique heritage and culture, while providing abundant, attractive, and high-income employment options. The 18-member Council is to serve as the principal advisory group to the Governor and the State in innovation policy issues facing the State and on specific measures and actions that the State can take to improve its capacity for innovation. The Council is led by 3 innovating leaders: Marc Benioff (Chair and CEO of Salesforce.com), Ron Higgins (CEO of RSHF LLC), Jay Shilder (Founder and Managing Partner of The Shidler Group). The rest of the founding members of the Council, in alphabetical order, consists of: Taft Armandroff (Director, W.M. Keck Observatory), Kirk Belsby (Vice President for Endowment, Kamehameha Schools), Dan Berglund (President and CEO, State Science and Technology Institute), Richard Brill (Professor of Physical Science, Honolulu Community College), Darrel Galera (Principal, Moanalua High School), Debra Guerin-Beresini (CEO, International Venture Fund), Karl Hess (National Science Foundation Board Member), Leigh Jerome, Ph.D., (Director, Institute for Triple Helix Innovation), Darren Kimura (President and CEO, Sopogy, Inc.), Karen Knudsen (Chair, Hawai'i State Board of Education), Mark Lindsay (Science Teacher, Iolani School), Mark Loughridge (President, Aloha Island, Inc.), David McClain (President, University of Hawaii), John Rand (STEM program director, Kapiolani Community College), and Patrick Sullivan (Founder, Chair and CEO of Oceanit). HTDC serves as the Secretariat for the Council.



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