



Hinman CEOs Alumni:



Changing the World
One Person at a Time

They are CEOs of companies, investment bankers, technology creators, award-winning filmmakers, attorneys, and researchers.

They're in Great Britain, South Africa, New York, and Silicon Valley. Their reach extends as far as Japan, Thailand, Mexico, and Portugal.

They are leading a new wave of wisely planned dot.coms, solving the emergency response challenges of society, and are studying how the purest levels of democracy can be effectively applied. They are stretching the boundaries of art with Sundance-bound films, and are developing next-generation technologies.

Some are working 80-hour workweeks, while others are earning dual advanced degrees. Some are burning long weeks at start-ups, while others are gaining

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knowledge at large corporations and consulting firms.

But one thing ties the 181 alumni of the Hinman CEOs Program together—an insatiable desire to make their mark.

“There is so much energy with these students,” said Karen Thornton, program director for Hinman CEOs. “The common thread I’ve seen in all of our students is that they want to be empowered and use that power to change the world around them. They want to create value in everything they do, and they do so from many different references and academic disciplines.”

That potential is what alumnus Brian Hinman, ('82, electrical engineering) a successful entrepreneur, envisioned when he commissioned the program with a \$2.5 million gift in 1999.

“To some extent, the program is self-selecting that way,” said Hinman. “It attracts the Type-A personality, those with the ‘world is my oyster’ attitude eager to

make their mark in the world.”

The magic of the program, according to several alumni, lies in living with 100 or so students who have the same ambitions. Teams and lifelong friendships are formed.

“The Hinman program was fantastic,” said alumnus Nick Adasi. “It



Diana Bernstein, Erika Richardson, Borna Ghavam



Left to right, top row: Marc Anolik, David Marquart, Anar Mikailov, Samuel Arumala, Jessie Leikin, Cindy Gilbert Left to right, bottom row: Diana Bernstein, Pamela Kalmus, Lindsey Bernstein, Rebekah Finch, Alex Beuchler.

surrounded me with highly motivated, hungry, young entrepreneurs—the guys on campus bouncing ideas off each other at 3 a.m. It taught me how to think out of the box, and that entrepreneurship isn’t something that happens overnight. Over time you develop ideas through experiences.”

Alumna Sarah Vogel worked with alumnus Lee Finkel to launch the Web site for her product. Jason Volk and Blake Robertson are partners at Alertus. Across the board, students stay in touch—sharing dreams and ideas, and making plans.

“When you connect with people who share your vision and enthusiasm, the relationships can run pretty deep,” said Hinman. “It’s a very powerful experience. Although graduates of the program might not start companies right out of school, they’ve already formed long-lasting or lifetime relationships. They’ll reconnect.”

They do. “We still keep in touch and share career ideas and topics and talk about how and when we’re going to become entrepreneurs, and what investment opportunities there are,” said Adasi. “At some point in our lives, I’m sure we’re going to help each other in a million ways.”

Award-winning, living-learning entrepreneurship program for undergraduates

Nick Adasi: Four Years, Three Continents, and Helping Raise \$60 Million for the First Television Network to Cover all of Africa

Nick Adasi wanted to work on Wall Street. Little did he know he'd be so successful that five short years after graduating, he'd help raise \$60 million for a new television broadcast network that could be the first to span the entire continent of Africa.

It starts with tenacity. The 2001 finance alumnus worked at five major investment banks before he

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— Karen Thornton, Hinman Program Director

graduated: Prudential, Fannie Mae, Legg Mason, Bank of America, and Goldman Sachs.

“Any time I was out of school I tried to work at a bank because I knew it was tough to get into a top-tier Wall Street investment bank,” said Adasi.

After graduating he joined Goldman Sachs, where he spent 16 months in New York before transferring to London to do consumer retail, healthcare, and investment banking.

“I wanted to go to Europe because investment banking is considered a career there,” said Adasi. “In the U.S., they expect you to go back to business school to advance.”

Accordingly, Adasi was promoted to Associate at Goldman and transferred to South Africa for one year.



Hinman CEOs alumnus Nick Adasi

“One of the reasons I wanted to move to Africa was I'd get to work with a top-tier investment bank in an emerging market,” said Adasi, whose parents are Nigerian.

“In four years I've lived on three different continents, working on mergers and acquisitions of large, multi-national companies,” said Adasi. “This was a great way to learn business from a global perspective, which is something a lot of people don't have an opportunity to do right out of college. Many people stay focused on the U.S.

“Every time I traveled, I found that in America things are built up and developed. When you go to places like Eastern Europe and Africa and the Middle East, you see the potential of simple technologies and ideas coming to that market. It helps me keep my global glasses on, applying the American mindset to global markets.”

Being in South Africa helped Adasi raise money for his family's new company, Foisi Broadcasting Network Inc. (www.fbnafrica.com), a pan-African commercial broadcasting and production corporation that plans to organize and broadcast Africa's premier intercontinental radio, television, and Internet signals in and out of all 53 African countries—promoting peace, unity, and prosperity across the continent.

The network will broadcast over satellite and

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— Nick Adasi, Hinman CEOs alumnus

through terrestrial data lines to reach over 250 million viewers.

Why You Like What You’re Doing

“Finance is a great way to meet a lot of people with access to capital,” said Adasi. “It gives you a sound understanding of how to analyze and manage the finances of a company.”

How the Hinman Program Helped You

“The Hinman Program was fantastic. It surrounded me with highly motivated, hungry, young entrepreneurs—the guys on campus bouncing ideas off each other at 3 a.m. It taught me how to think ‘outside of the box,’ and that entrepreneurship isn’t something that happens over night. Over time you develop ideas through experiences. More than anything, it was a mindset it gave me. The people that surrounded me were helpful. We still keep in touch and share career ideas and topics. We talk about how and when we’re going to become entrepreneurs, and what investment opportunities there are. At some point in our lives, I’m sure we’re going to help each other in a million ways.”

Advice for Current Hinman Students

“More than anything, you want to focus on developing yourself. A lot of people focus on developing a product or idea, but if you can spend time on your financial skills, your business planning skills, your marketing skills—all the things it takes to be a good entrepreneur—over time you begin to take a view of the world as an investment; you analyze and see why some things work and how others don’t. You become astute

in entrepreneurship. Entrepreneurs are jacks-of-all-trades. Focus even on things you don’t like. Make your weaknesses into strengths, because down the line it will make you a better entrepreneur.”

Anthony Casalena: Fixing His Way to Success

Sitting in his new office in New York City’s Tribeca district, Anthony Casalena sums up his success this way: when he doesn’t like the way something works, he creates a product to fix it.

Squarespace (www.squarespace.com), a publishing system for managing websites and blogs Casalena launched while in college, started that way. Squarespace now has over 100,000 trial registrations and over 50 million monthly page views.

Mentioned in the same breath by the media as Google’s Blogger, Squarespace evolved simply: “I didn’t like making a web site, so I made my own product,” Casalena explained.

“People sometimes invent businesses based on some very elaborate connections between markets,” said Casalena. “There are people producing video content for mobile phones. I don’t understand how



Hinman CEOs alumnus Anthony Casalena

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a startup can engage in that sort of thing. Not to say that's a bad business, but it must be really hard as a startup to do that kind of thing. There are other startups that are really easy—and those are the ones where the value proposition is really clear.”

Squarespace's value proposition is clear. “Do you need to build a web site? Here you go. It's hard to build a web site. Squarespace makes it easy.”

Casalena doesn't like online chat programs, so he's working on one of those as well. After that, he may build personal information products.

That's not to say Squarespace is stagnating. Ten minutes at www.casalena.org makes you wonder if he sleeps. Casalena is constantly and thoughtfully adding new features and improving his system.

Squarespace has attracted the interest of major investors, including some major west coast VCs, which flew Casalena to Silicon Valley to talk.

“It was a great experience,” said Casalena. “It [Squarespace] just doesn't fit the model of all firms. Squarespace isn't like YouTube in that it won't experience escalated growth. We left on really good terms.”

What Do You Like About What You're Doing?

“It's been really exciting for me to actually go to an office. It's been re-energizing. I love coming out to work and it puts a really good spin on things (as opposed to being in a dorm room). Being in the same place all the time puts a drain on you. Tribeca is a phenomenal area. It's a landmark itself. There are lots of people in New York just trying to get started. It's tough, but there's lots of enthusiasm. One incredible thing that helps bring the tech community together in New York is that everyone is a five-minute cab ride from one another.”

How Did the Hinman CEOs Program Help You?

“The Hinman Program is a great facilitator of ideas. If you're someone looking to start a company, Hinman will be very good for you. The Program can connect you with people you need to meet. It fosters a more professional way of thinking about a business, exposes you to things you wouldn't see otherwise, such as

“Fix problems. People will pay you to have their problems fixed.”

— Anthony Casalena, Hinman CEOs alumnus

venture capitalists or evaluating business plans. It's valuable for you to see how all these things work in the real world.”

Advice for Current Hinman Students

“Fix problems. People will pay you to have their problems fixed. Don't let investors discourage you from developing a good idea. Imagine you have the best idea in the world for a product—but no traction. As a new entrepreneur, you definitely won't be able to get funding for that idea. That doesn't mean the idea—along with your execution—won't get funding in six months after you prove that it works. Investors are evaluating an opportunity, rather than simply your ideas. Don't worry about investors' decisions about really early stage technology.”

Kavita Khurana and Google: The Perfect Match

Kavita Khurana ('05, Computer Science) is not the type of computer scientist who would be content coding all day. She's outgoing, inquisitive, and rarely sits still.

Google, a company that openly advertises “you won't find any bored engineers here,” and working at Google is an “opportunity to test the limits of your intellectual abilities,” was the perfect match for her.

“People here [at Google] are very motivated and



Hinman CEOs alumna Kavita Khurana

passionate and excited,” said Khurana, “and the work is very challenging. Everybody has to keep up and keep ahead of the competitors. The pace is incredible. I’m busy but really happy.”

An associate product manager at Google, Khurana is jointly responsible for the design, development, deployment and improvement of many of the company’s products.

She’s worked on Google Alerts, Personalized Search and Search History. Now she’s working on improving Google AdWords.

“It’s exciting because it’s almost like being a jack-of-all-trades, but you know everything well. You analyze what a user needs. You work closely with the marketing team; they come up with markets and competitors. You work with engineers, partners, and user support—asking does it make sense, what are the features we can include, what is the roadmap to launch, what are the milestones, and what are the deliverables?”

“Last week one of my projects was selected for demonstration to Google’s board of directors. Can you imagine being twenty-three years old and having your project get selected for a demo to the board of directors? You don’t get that visibility at a lot of companies.”

Why Do You Like What You’re Doing?

“Google believes in launch early, launch often, and get feedback. There’s less opinion here. They believe



Hinman Program Director Karen Thornton and Kavita Khurana

in ‘let’s get facts, let’s get data.’ We’re constantly having strategy sessions to talk about Google’s future and what we should work on. You learn so much more about the company. You learn about the big business picture; it’s not like someone tells you ‘go do it.’ In the end you launch.

“Make sure you build your relationships with people. They’re lasting. You’ll realize it later on. Make sure you keep in touch with the people you meet and interact with. You never know what you’ll learn from them. The best friends I have are the Hinman CEOs I lived with for two years. We’re like a family.”

— Kavita Khurana, Hinman CEOs alumna

It’s very exciting. We are the glue that sticks all these elements together.

“Google is really great about making sure employees are happy,” Khurana added. “Happy employees do a great job.”

How Did the Hinman Program Help You?

“When I came into the Hinman Program, I was a CS major and knew that if you code, you get results. Hinman trained me to think of a world beyond just coding. During speaker sessions someone would talk about patents and intellectual property; I had never been exposed to them. Knowing there’s another world you have to consider when you develop something—a class won’t teach you that, but it’s important to know when you’re at a company.

“Then, there were the people and the resources. Being in a living-learning environment where people were highly motivated, inspired, and entrepreneurial ensured I would continuously grow and thrive. I knew I wouldn’t get that elsewhere.”

What Advice Would You Give a Current Hinman Student?

“Make use of all the resources. There were times I’d only fill class requirements. We had all those great people available to us. Make sure you build your relationships with people. They’re lasting. You’ll realize it later on. Make sure you keep in touch with the people you meet and interact with. You never know what you’ll learn from them. The best friends I have are the Hinman CEOs I lived with for two years. We’re like a family.”

Award-winning, living-learning entrepreneurship program for undergraduates

Anik Singal: From Lifestyle Business to Industry Leader

Anik Singal ('05, finance) started Affiliate Classroom, a step-by-step training program to help people launch and grow affiliate Internet businesses, as a lifestyle business in October, 2004. Anik was a senior in the Hinman CEOs Program.

Two short years later, 70,000 people subscribe to AC's affiliate marketing newsletter. Over 12,000 people have completed AC's affiliate marketing training program.

The company has grown to seven employees. They've released an entire boxed course on affiliate marketing, with two DVDs, 12 CDs of audio interviews, a workbook split into ten modules, eight checklists, and a CD with six templates an affiliate manager would need to use.

The company's monthly Affiliate Classroom magazine, now over two years old, also has a 70,000-person subscriber base.

The company ranks first on Yahoo! when searching for "affiliate marketing," and consistently ranks in the top three on Google.

Singal recently met with eBay's director of affiliate marketing to discuss contributing content to AC's magazine.

"If I look back to when I first started this two years ago, I'm mesmerized by the growth of the company," said Singal. "This was not supposed to be a big company. Now that I have the big picture and know what the company is capable of doing, though, I am not as surprised."

After graduating in May 2005, Singal was working

from home and realized AC was growing too fast. He called Karen Thornton and James Green for advice. They referred him to MTECH Ventures' new VentureAccelerator Program, a selective initiative designed to help faculty and students committed to creating new companies based on technology innovations.

"It was perfect timing for me to get myself situated and constructed properly," said Singal. "That referral itself was worth gold."



Hinman CEOs alum Anik Singal

"VA has been incredible," Singal explained. "Scott Laughlin [Director of VA] expanded our vision. He taught me how a big business gets built. He's traveled coast-to-coast with me and introduced me to everyone I need to know. We just got back from San Francisco, where we met Brian Hinman. During the same trip, we had coffee with the director of eBay's affiliate program in Palo Alto."

More than anything, Singal said, VA helped him refine AC's business model. "We know exactly what we

want to go after," Singal explained. "We've solidified our process for approaching the market. We're expanding our brand and meeting new people. We're constantly building."

Forrester Research reported last year that affiliate marketing is a \$95 billion industry.

"We see affiliate classroom becoming the center of the industry—the sole resource for affiliate manager training providing all the training resources someone would need," said Singal. "We are the trusted third party."

Affiliate Marketing, according to Wikipedia, is a "widespread method of promoting a website, in which

an affiliate is rewarded for every visitor, subscriber and/or customer provided through his efforts.”

How the Hinman Program Helped You

“The Hinman program was incredibly helpful because I had someone to sit down and talk to. I’d meet James on almost a daily basis sometimes. He’d walk me through ideas, helping me shape them so they made sense. The entrepreneurship course helped with networking and connections, as well as enabling me to talk to someone [then instructor Scott Laughlin] who already knew how to be a successful entrepreneur.

Advice for a Current Hinman Student

“Don’t take the program lightly. Use resources. Talk to people; ask questions. When Karen and James tell you to contact someone, go through with it. James is always available. It’s the perfect opportunity to brainstorm and run ideas by him. Use the program and network as much as you can.”

Zachary Bookman: Thinking Big—Democracy and Law for a Better World

Zachary Bookman (’02, government and politics) does not think small.

During his valedictory speech in 2002, he offered his vision of how the University of Maryland could be one of the five top public institutions in the country, and how students fit into that idea.

Next he wanted to study both law and politics at Ivy League schools, so he did—both at the same time. Bookman is earning joint degrees in law and public policy—a JD at Yale University, and a Master’s at the

“All roads, if you have the motivation and desire to make a better world, lead to the same place. I want to make an impact. I want to change peoples’ lives as well as our society for the better, in as big a way as possible.”

— Zachary Bookman, Hinman CEOs alumnus



Hinman CEOs alumnus Zachary Bookman

Harvard University Kennedy School of Government.

He plans to pursue a Fulbright fellowship next year to study the new freedom of information act passed by the Mexican government, believing it can help both the country and the world. In preparation, Bookman has learned Spanish.

“The new and sweeping transparency law passed by the Fox administration has great potential to promote human rights, fight corruption, and strengthen Mexico’s democracy,” said Bookman.

Bookman visited Mexico’s Federal Institute for Access to Public Information last March through a small grant from the Kennedy School. There he forged relationships, garnering support from the commissioner of the agency.

“Mexico is an exciting and tumultuous place, and of strategic importance to the U.S. in ways we don’t recognize,” said Bookman. “This issue is of central importance to Mexico right now. It could also serve as a global model for emerging democracies.”

Why Do You Like What You’re Doing?

“Being able to work in our legal and political system is probably the best chance for producing great changes. All roads, if you have the motivation and desire to make a better world, lead to the same place. I want to make an impact. I want to change peoples’ lives—as well as our society—for the better, in as big a way as possible.”

How the Hinman Program Helped You

Award-winning, living-learning entrepreneurship program for undergraduates

“Two things influenced me the most. The first was the continual presence of really interesting, motivational and inspiring speakers who talked about their lives, businesses, and successes. I loved hearing entrepreneurs tell us about their quests to do well for themselves, which does well for the people that work for them and the economy. They’re really interested in building wealthy, strong, and innovative societies. The second thing I enjoyed was the presence of a bunch of really smart, and savvy young entrepreneurs—other students. Getting to know them, and to hear their ideas and dreams reinforced what we heard in class and from others who achieved success already.”

What Advice Would You Give a Current Hinman Student?

“Start thinking deeply about what kind of career you want to have, what industries you might want to work in, and what kind of person you want to be.”

Young Lee: Artistic Entrepreneur has Film in Sundance

Filmmaker Young Lee ('03, Computer Science) has a movie in the 2007 Sundance Film Festival.

Just a year into the New York University Master of Science Program in Digital Imaging and Design, Lee was asked to create a 60-90 second short film for a contest sponsored by Krups International Coffee & Espresso Machines.

The film Lee produced, “Espresso Ninjas,” was selected as the winning entry; the film is now featured on a new Web site: www.espressoshorts.com.

Dubbed “branded entertainment” by *The New York Times* in a September 6 article that also spotlighted Lee, the film will appear in the 2007 Sundance Film Festival through a sponsorship by Krups.

“Krups invited a lot of celebrities to the competition,” said Lee, “including AMC’s Richard Brown, Joan Allen (*Face-Off*), and F. Murray Abraham (*Amadeus*). “The event was at the Tribeca Hotel; they announced the winner and I went up on stage.”



Left: Hinman CEOs alumnus Young Lee filming Sundance-bound “Espresso Ninjas.”

While in the Hinman Program, Lee worked as a freelance Flash animation and Web designer.

After graduating, he went to Taiwan for two months, where he worked at a museum doing promotional documentaries and short films.

Shortly after, he enrolled at NYU.

Young is currently developing a spec short film about ninjas that aims to seamlessly blend visual effects, live action footage and a strong story into a debut feature film he hopes to pitch to studios.

What Do You Like About What You Are Doing?

“I’ve been making films and writing and focusing on every aspect of the filmmaking process,” said Lee. “I just finished a 30-minute short film and have been sending it to festivals. It’s a gang-war, action drama

with a strong story at the heart of it. Ultimately I want to create strong, dramatic stories with high concepts that require visual effects. Special effects are a means to tell better stories.”

How Did the Hinman Program Help You?

The Hinman Program was one of those rare and valuable opportunities that had a life-long effect upon my career. It gave me an entrepreneurial mindset. It’s especially useful as an independent filmmaker, as you have to market yourself in creative ways. It helped me develop a mindset to think about the market; in my case that involves thinking about the types of stories people are interested in.”

What Advice Would You Give a Current Hinman Student?

“I’d challenge any young student to really utilize all the resources they have available to them through the program to the fullest extent. It’s a great time to learn and you have so many people you can talk and network with. If you have dreams and ideas, it’s very efficient to bounce them off other students and advisors in the program. Before you know it, college is gone, so stretch yourself, stretch your mind. If there’s something that you want to do, don’t wait—don’t hold back—the sky’s the limit!”

Lee Finkel: Big Moves in the Big Apple



Lee Finkel’s (’05, marketing) clients include AXE, makers of deodorant body spray, and Viacom. His firm has developed e-vites for the TV

show “South of Nowhere” on the N Network, as well as for an “AXE Hit Your Numbers Party.” He has provided web, print, and multimedia services to hundreds of clients across the country, and still manages to plan and entertain at events for

thousands every year.

Finkel’s company, which he started as a Hinman student as Optimum Productions, has grown into two branches: OP Digital, specializing in web design and marketing; and OP Events, an event services company.

“Optimum Productions started as an event planning and services company,” said Finkel. “Its roots are still going strong. It’s finding the balance between the events side and the marketing side that’s the hard part. Both companies are growing at such a rapid pace, it’s hard to keep up,” he says.

OP Events is an entertainment company providing music, photography, video, and multimedia services to a wide and diverse clientele. Though much of Finkel’s business is in New York, where he now lives, he still has many clients in Maryland through a small base of employees located there.

OP Digital started in 2004, when Finkel was struggling to find a high-quality Web designer for his first venture. After Carnegie Mellon University student Jordan DeVries designed OP’s first Web site, Finkel proposed teaming to offer design services through a company subdivision called OP Digital. The rest is history.

“It’s expanded faster than I ever imagined,” said Finkel. “It’s now a large part of my day-to-day operations, both in terms of the time I spend and the clients I have.”

OP Digital just launched a new, Flash-based web site. They’ve designed web sites for Affiliate Classroom, I-Receipts.com, and Babyfones—companies started by other Hinman alumni.

“With the expansion, we’re busy. We’re targeting small companies looking for quality work,” said Finkel. “Lately,



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however, bigger name clients are noticing our work and are getting in touch with us.”

AXE and Viacom were two.

“When you deliver a product that wows people, they’re willing to listen,” said Finkel. “Whether providing entertainment for a group of teenagers or delivering a Web site to a group of corporate businesspeople, the same concept holds true. People will pay a premium for a quality product.”

What Do You Like About What You’re Doing?

“What DON’T I like about what I’m doing now? I’m doing what I love.

“At times it can be stressful, but the independence makes everything worthwhile. Plus, I set my own hours, although that often means 80 hours in the office every week. It’s amazing to see, though, the direct correlation between the time I put in and the benefits that come as a result of hard work.”

How the Hinman Program Helped You

“The entrepreneurial spirit is everywhere. You’re living with students who are all looking to get involved somehow; some have their own ideas for a business, while some are looking to get involved with others. There are different speakers each week who share their life stories and lessons; these weekly ‘classes’ are not only motivating, but inspiring as well. The mentors available are invaluable. People like Karen Thornton are always there to lend a helping hand.”

Advice to Current Hinman Students

“Take advantage of everything that is offered to you. There are so many resources available—mentors, weekly speakers—even your fellow students. Network. Don’t be shy! Although students in the program come from diverse background, everyone around you has an interest in entrepreneurship. Connect with your peers while they’re still down the hall. Before you know it, they’ll be across the country, making millions!”



Hinman CEOs alumnus Adam Ostrow

Adam Ostrow: Two Start-Ups: One by Day, One by Night

Adam Ostrow ('04, journalism) founded his first company MindSay (www.mindsay.com), a platform for sharing user-generated content and social networking, with fellow student Brian Klug ('04, computer science) while he was a Hinman CEO.

Although MindSay is now his part-time job on the side, the platform has over 125,000 users and 5 million page views a month. New features such as video and photo sharing are planned soon, as is the roll-out of standalone software for building social networks.

Ostrow's full-time job is product manager for the Hawaii-based Internet start-up ChipIn (www.chipin.com). ChipIn is a Web-available service that securely manages the process of “chipping in” and collecting money for gifts, personal causes, or for community fundraising.

Ostrow was introduced to the company through a friend—who also happened to be the lead developer for ChipIn.

“It is akin to a social PayPal,” said Ostrow. “It automates the process of chipping in, whether for a group gift, a travel expense, or for non-profits and individuals.”

Prior to joining ChipIn, Adam worked for Virginia-based mobile content company Opera Telecom, which sold ringtones and applications. Ostrow helped the company add community features to its product.

Why Do You Like What You're Doing?

"We work long hours, but everyone owns a piece of the company, so if we're successful, everyone is going to benefit."

Benefit of the Hinman CEOs Program

"The Business Plan Competition was terrific; we won an award and it's nice to put that on my resume. I also won the Hinman CEOs Most Outstanding Senior Award, which helps when interviewing for jobs. I still keep in touch with a lot of people from the program. We share what we're doing and bounce ideas off each other."

Advice for Current Students

"Participate in the Business Plan Competition. It got me a lot of one-on-one time with people in the program, and introduced us to knowledgeable people such as Scott Laughlin, who gave us great business advice. Meet as many people as you can. I was only there one year, but I wish I had been there longer and met more people."

Sarah Vogel: Babyfones: Headphones for Your Baby

Experts have long thought that exposure to music while in the womb might aid in a child's cognitive development. But getting babies that exposure in today's world can be difficult. Sarah Vogel ('04, business major) thinks she has the answer.

Vogel's company, Babyfones, is launching a belt made especially for pregnant women, with built-in speakers to project sound into the womb from an mp3 player. Babyfones will be sold on Amazon and directly through the company's web site, at www.babyfones.com.

"Babyfones is designed for busy, modern-day women who are constantly 'on-the-go' and want to play music to their babies," said Vogel. "Research has



Hinman CEOs alumna Sarah Vogel

shown that listening to rhythmic music helps children develop linguistic skills even before they're born!"

Vogel wrote a business plan for Babyfones while she was in the Hinman Program. She realized the market potential when she witnessed pregnant women placing uncomfortable headphones onto their abdomens to play music for their babies.

Current products are limited in both form and function, according to Vogel. "While there are products that can play CDs, there are currently no products available that can accommodate your own music from an mp3 player," she said.

After graduating in December 2004, Vogel joined Booz Allen Hamilton as a Consultant. She is now a Senior Consultant. Vogel attributes the real-world business knowledge she acquired at Booz Allen to the successful launch of Babyfones.

Vogel won the Robert H. Smith School of Business's Undergraduate Business Plan Competition twice—once in 2003 as part of the Cyprus Precision team, which

"Spend the time to come up with lots of great ideas. Write business plans and try to implement them while you're in school and still have the time and resources to do it. Learn from anyone who is willing to help you..."

— Sarah Vogel, Hinman CEOs alumna

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included two other Hinman students, and in 2004 with Babyfones, teaming with another student from the Entrepreneurship Citation program.

Why Do You Like What You're Doing Now?

Vogel loves being able to use her entrepreneurial skills to come up with creative solutions to complex problems. "I am very lucky to work for a company that values entrepreneurship so highly," said Vogel. "My managers have been extremely supportive of my ventures, and the entrepreneurial skills I continue to hone outside of work also benefit Booz Allen."

What Did the Hinman Program Do For You?

"I learned a great deal in the Hinman Program: how to write a thorough business plan, create an integrated marketing strategy, and plan a realistic budget. But the most important thing I learned was how to manage my time. When you get out into the real world, you're most likely going to be working full-time. Trying to start a company when you get home at night is not easy. However, with careful time management it can be done."

Vogel also learned a great deal about intrapreneurship, or how to apply entrepreneurial skills to a large corporation. "I have been able to apply the entrepreneurship skills I learned in the Hinman program to a large firm."

What Advice Would You Give a Current Hinman Student?

"While you're in college, you are surrounded by knowledge and resources. Living in the Hinman dorm gives you opportunities to bounce ideas off each other. You can easily schedule meetings with professors, then walk over to their offices to meet.

"Spend the time to come up with lots of great ideas. Write business plans and try to implement them while you're in school and still have the time and resources to do it. Learn from anyone who is willing to



Hinman CEOs alum Terrence Hines

help you—your fellow students who may be starting up their own businesses, professors who will review your business plan—and anyone who's willing to tell you about their mistakes so you don't make them yourself!"

Terrence Hines: Vision for Athletes

Terrence Hines ('03, neurobiology/physiology) launched Invision Sports Network (www.isnsports.com), a service that creates custom Web sites and media for athletes, in 2003.

Four years later, the service has served hundreds of high school, college, and youth athletes. Invision has contracts with several minor league basketball teams for creating Web-based content and streaming video.

The company employs 12 people, with offices just outside of Atlanta, Ga., Hampton Roads, Va., and Lanham, Md.

"We've developed a strong leadership team, and we've developed and tested many products and services we're offering," said Hines. "Our goal is to be in 12 cities across the country by this time next year."

Invision hosts individual Web sites for athletes. Those sites contain profiles, statistics, awards, photos, and video of game highlights.

Invision has also launched a Web development

branch, www.ipraiseonline.com, which creates Web sites and offers video streaming for churches and small businesses.

“It’s a people business,” said Hines. “I’ve learned that Packard’s law is a reality—I can only grow revenues through the people I attract to work for the company.”

Why Do You Like What You’re Doing Now?

“We’ve helped kids who typically fly under the radar get scholarships into smaller Division I-AA, Division II and Division III schools such as Norfolk State and Elizabeth City State University,” said Hines.

How the Hinman Program Helped You

“The Hinman program was a good platform for me to launch from. Since I was not a business major, it provided me a strong foundation of knowledge about how to start a business. I learned the areas I needed to focus upon.”

Advice for Current Hinman Students

“Take advantage of the resources available to you, and talk to everyone you have access to at Maryland. Really get to know the great people around the Hinman Program, whether in MIPS or in TAP, that have a lot of experience and you can have a relationship with, bounce ideas off of, and learn from.”

“The Hinman program was a good platform for me to launch from. Since I was not a business major, it provided me a strong foundation of knowledge about how to start a business. I learned the areas I needed to focus upon.”

— Terrence Hines, Hinman CEOs alumnus



Hinman CEOs alumnus Borna Ghavam

Borna Ghavam: Shaping Next-Gen Video in Silicon Valley

Borna Ghavam (’06, electrical engineering) is helping pioneer the next generation of video chips for both consumer and professional electronics.

Just a few months out of school, he’s developing compression algorithms for Silicon Valley-based Qpixel Technology, a privately held fabless semiconductor start-up developing low-power-

consumption, low-latency, high-quality, H.264-based audio and video encoder/decoder solutions for the digital consumer electronics and digital video communication industries.

“I am an algorithm engineer,” said Ghavam. “I am deep into designing exactly how our chip functions on the process level. The main focus is creating better quality video out of our chip.”

While in the Hinman Program, Ghavam started MenuTeaser™, a College Park-wide advertising booklet for restaurants. The first edition, distributed to over 70,000 College Park residents, included advertisements and menus from Jungle Grille, Franklin’s, Marathon Deli, Santa Fe, and Calvert House Inn.

Ghavam learned most about delivering on promises from MenuTeaser™.

“When you’re starting a business, building a product and delivering on it, you learn responsibility and how to deliver on your commitments,” said Ghavam. “You learn real fast how to deal with people and multi-task.”

Hinman CEOs Program benefactor Brian Hinman

Award-winning, living-learning entrepreneurship program for undergraduates

invited Ghavam to Silicon Valley and introduced the talented engineer to Qpixel Technology.

Why Do You Like What You Are Doing?

“If you are interested in launching a technology-based start-up in the future but want to get some experience under your belt, then working for a start-up is a great way to go. I have seen a lot of growth in this company. It forces you to think hard and teach yourself a lot of things.

“Everyone at this stage is so important to the livelihood of this company and there’s only so many people here, so everyone’s job counts. There’s an urgency to complete your tasks. Overall, I’m soaking up a lot of what it takes to be involved at a tech startup at an early stage.”

How Did the Hinman Program Help You?

“The mentoring from James and Karen was top-notch. They really helped me think about problems and solutions. The other thing the Hinman Program provided was confidence building. To be a part of a start-up, you need to have enough confidence to take the risk and jump into it.”

Gary Yang: Learning then Doing—From Consulting to Start-Up

Gary Yang ('02, Computer Engineering and Finance) is the anchor of London-based start-up viagogo (www.viagogo.com), an online ticket exchange that allows people to buy and sell tickets to live events in a safe and guaranteed way.

As viagogo’s third-hired employee, he has helped build the company from the ground up.

“I laid the foundation for several functions, including operations, human resources,

viagogo



Hinman CEOs alumnus Gary Yang

marketing, and finance,” said Yang. “As our company has grown, we’ve been able to hire more experienced people to take over several of those responsibilities. Over the past year, I’ve done everything from negotiate contracts to determine how to scale our business, which has taught me a tremendous amount. Our CEO hired me on the premise that I wasn’t an expert in everything, but that I could learn quickly enough to do a good job across the board.”

Yang has. The company signed deals in August with Chelsea FC and Manchester United to offer a ticket exchange system which promises seats “at near face-value for ticketless but dedicated fans,” according to a company press release.

“The hardest thing about working in a start-up is it takes persistence and tenacity to get anything done,” explained Yang. “Vendors, potential partners, recruits—they don’t give you any credit because they don’t know

“The Hinman Program opened me up to the idea of starting companies. Before joining the program, I had always planned on joining a corporation like Microsoft and working my way up, which wouldn’t have been nearly as exciting as what I’m doing now.”

— Gary Yang, Hinman CEOs alumnus

who you are. The adage that success is 99 percent perspiration—there’s truth behind that statement, especially for start-ups. Success only comes after pushing through obstacles to achieve your goals.”

Out of school, Yang joined Booz Allen Hamilton, where he spent one year before joining the Boston Consulting Group, where he spent two years.

Yang met an investor for viagogo while at BCG, which led him to join the company. He engaged in fundraising for viagogo out of New York for several months, then helped the company relocate to the United Kingdom.

But the consulting work, he maintains, laid the foundation for what he’s doing now.

“I learned how to get things done in real environments,” said Yang. “If I had come to viagogo straight out of school, I would not have been able to contribute as much as I do now.

“People start companies under many circumstances,” Yang explained. “For me, having relevant industry experience was valuable in teaching me how to structure my thoughts and how to deal with people in a professional environment to get things done.”

Why Do You Like What You’re Doing Now?

“Helping the company grow has been fantastic. We’ve recently launched our product with key partnerships in place. Also, seeing revenue come in the door has been pretty exciting—seeing the fruits of our labor.”

How Did the Hinman Program Help You?

“The Hinman Program opened me up to idea of starting companies. Before joining the program, I had always planned on joining a corporation like Microsoft and working my way up, which wouldn’t have been nearly as exciting as what I’m doing now.”

What Advice Would You Give a Current Hinman Student?

“Make the most of your opportunities and never stop learning.”

Blake Robertson and Jason Volk: Emergency Alert System for All Hazards

Following the attacks on 9/11 and the tornado that struck the University of Maryland, Jason Volk (’03 accounting, ’05 MBA) recognized the need for a better way to notify people of an emergency.



Hinman CEOs alumnus Jason Volk

In 2002, Volk started Alertus Technologies (www.alertustech.com), a company that has since developed an all-hazards emergency alert system.

Alertus’s system enables safety leaders to disseminate localized, custom text alerts to wall-mounted beacons. Similar to a fire alarm, each beacon contains strobe lights and a siren, but also contains a text LCD display. Alerts are transmitted in seconds to all beacons or specific areas, buildings or rooms using a reliable radio frequency communication.

For approximately the cost of conventional siren towers, the Alertus solution offers audible and visual signaling, coupled with text information, empowering everyone to respond during any emergency. The Alertus system has a low cost of ownership with no recurring service fees.

With customers such as college campuses and school systems, Alertus is already making educational institutions safer places to be.

Blake Robertson (’05 computer engineering) joined Alertus in 2003 to provide engineering expertise.



Award-winning, living-learning entrepreneurship program for undergraduates



Hinman CEOs alumnus Blake Robertson

Robertson developed both the hardware and software components of Alertus's wall-mounted emergency alert system. Since then, he was named chief technology officer for the company, providing vision for product development and working with manufacturers to build the Alertus system to customers' specifications.

In 2003, Volk and Robertson won \$15,000 in the University of Maryland Business Plan Competition. Alertus also received funding from both the Maryland Industrial Partnerships Program and the National Collegiate Inventors and Innovators Alliance. The company received both a C-E-O Technology Entrepreneurship Award and a Senior Summer Scholars Research Grant.

Why Do You Like What You're Doing Now?

Volk: "Helping customers to ensure the safety of their students, employees, and visitors is highly rewarding."

Robertson: "I like being involved at the various levels of the product development lifecycle. At a larger company you might typically specialize in one area, but here I get to switch gears and work on something different every two weeks."

"Although I'm heavily involved in the technical deployment aspects of our company, there were weeks of marketing where we were on the road talking to customers, going to conferences, and designing marketing literature. On the technical side of things I've been involved in electrical design, mechanical design, firmware development, web services, protocol drafting,

and testing. I'm constantly learning new things."

How Did the Hinman Program Help You?

Volk: "Hinman CEOs offered an invaluable opportunity to meet and learn from other aspiring entrepreneurs."

Robertson: "The Hinman Program transformed me from an inventor into an entrepreneur. It provided me with the resources to take my inventions to the next level. One of the most notable experiences was being placed in Dr. Neil Goldsman's research laboratory for a summer internship. There I learned the tools for prototyping and fabricating electronic circuit boards. When my internship was over, I was offered a research position, which I retained until I graduated. The Hinman Program opened that door for me. The networking aspect of the program enabled me to meet Jason. As an engineering major, that opportunity might never have arisen if not for the Hinman CEOs Program."

What Advice Would You Give a Current Hinman Student?

Volk: "The most critical decision in starting a new venture is who you recruit to the team."

Robertson: "Don't get bogged down by the seemingly endless checklist of requirements for starting a business. That's the "Catch 22" of the program. While it teaches you the details for starting a business, those details can be overwhelming. It's important for you to actually start implementing some part of your business—even if you can't answer every difficult question thrown at you by your fellow entrepreneurs."

"The Hinman Program transformed me from an inventor into an entrepreneur. It provided me with the resources to take my inventions to the next level. "

— Blake Robertson, Hinman CEOs alumnus



Additional Hinman Alumni Updates

Pavalli Agarwal: Accenture

Jordan Baker: U.S. Patent Office; www.Pastepunk.com

Adam Banes: Cooley Godward Kronish LLP

Nitesh Batra: Freddie Mac

Namrata (Pinki) Boveja: earned MBA from Smith School; currently at U.S. Patent and Trademark Office; pursuing law degree at University of the District of Columbia

Gregory H. Chambers: KPMG LLP

Dennis Cinelli: General Electric

Mikaela Rossman Clark: Davis Upton and Palumbo

Kushi Desai: University of Maryland Law School

Obianuju Enendu: Columbia Law School

Alex Frey: T. Rowe Price

Alsace-Lorraine Gallop: University of North Carolina, Chapel Hill health policy master's program

Lee Gong: Microsoft

Rushi Gupta: Accenture

Rena Hahn: NBC (Universal)

Manny Herrmann: American Civil Liberties Union

Sam John: Booz Allen Hamilton; won company's award for "entrepreneurial energy"

Leah Jones: 3 years with JP Morgan; recently moved to small private wealthmanagement firm in Chicago

Jeff Kayce: Bozzuto Development Company

Joseph Koicim: Marcus & Millichap

Ben Krefting: Accenture

Manisha Kumar: Bank of America

Joy Limpawuchara: T. Rowe Price

Adam Lutz: DC Energy

Matt Meneffe: Accenture

Geetika Nagpal: Microsoft

Masato Nakagawa: Freddie Mac

Chris Newman: co-founded TFG Technology Solutions

Bernard Ng: JP Morgan Chase

Tuan Nguyen-Viet: Johns Hopkins University; completed MS in Telecommunications at UM

Ryan Ockuly: AVAYA; real estate

Kapil Pandit: Howard Law School

Rashida Petersen: Department of Commerce

Jason Repac: graduate program in chemical engineering, University of Maryland

Ari Resekh: Sapient Corporation

Connect with other
Hinman alumni at

[www.hinmanportal.umd.edu!](http://www.hinmanportal.umd.edu)

Dan Roffman: computer forensics consulting firm

Christian Rotter: Black & Decker

Rob Sherman: Covington and Burling LLP

Joey Soleiman: real estate development

David Thaw: earned a master's in Political Science from Berkeley; pursuing a Ph.D. in Information Systems

Steven Tom: completed MBA from MIT; joined Deloitte & Touche

Lisa Vora: Booze Allen Hamilton

Matt Weinstein: American University law school

James White: mathematics doctoral program, University of Maryland

Ilya Zusin: real estate development

Award-winning, living-learning entrepreneurship program for undergraduates

About the Hinman CEOs Program

As the nation's first living-learning entrepreneurship program, Hinman CEOs is a groundbreaking program placing entrepreneurially-minded students from all technical and non-technical academic disciplines in a unique community. Students live together, learn about entrepreneurship, and can launch new ventures. The mission of Hinman CEOs is to foster an entrepreneurial spirit, create a sense of community and cooperation, and develop ethical leaders. All undergraduates from the University of Maryland, College Park are invited to apply for this competitive program.

LIVE with student entrepreneurs

- **Engage** in a dynamic community to develop your entrepreneurial mindsets and knowledge
- **Grow** your ideas with our aspiring & active student entrepreneurs
- **Experience** on-site coaching & mentoring from experienced staff
- **Become** an entrepreneurial thinker sought by investors & employers
- **Enjoy** our business center, conference room & social room in South Campus Commons

LEARN in a vibrant experiential environment

- **Engage** with entrepreneurial leaders in our exclusive speaker series
- **Develop** leadership, confidence & strategic skills to build a company today or later in your career
- **Brainstorm** in an open, diverse & ethical community
- **Earn** internship opportunities with companies recruiting Hinman CEOs
- **Expand** your network by making life-long connections to today's leaders & tomorrow's CEOs

LAUNCH real companies

- 25% of Hinman CEOs develop & launch companies as undergraduates, while others attend top graduate schools and join leading corporations
- Students have won grants & awards exceeding \$260,000
- Student companies generate significant revenues

Visit hinmanceos.umd.edu!



Brian Hinman: The Original CEO

“I never regarded myself as an entrepreneur,” Brian Hinman says, even after starting three companies. “In the last couple of years I think I’m finally coming to the conclusion that that’s what I am.”

But even in his undergraduate days at Maryland he knew that he wanted to own his own technology company. On his graduate school application, he wrote that the reason he hoped to attend MIT was to find some other people who would eventually want to start a business with him (a goal achieved). So when Bill Destler, former dean of the A. James Clark School of Engineering and now senior vice president for academic affairs and provost, first approached Hinman with an “out-of-the-box” notion to encourage students with entrepreneurial aspirations, he found another idea he could run with.

The Hinman CEOs Program was created through a generous \$2.5 million commitment, establishing the nation’s first living-learning entrepreneurship program at the University of Maryland.

Hinman expected the Hinman CEOs Program to attract students with a “world is my oyster” attitude, creating a sense of community and cooperation among like-minded people. These students have a unique opportunity to share the experience of finishing their undergraduate educations within the program that will impact the way they think about their careers and destinies and encourage them to pursue entrepreneurial careers.

Hinman hopes that the Washington, D.C., area will become a more fertile ground for high-tech growth companies as a result of the program. He had always felt that the university should be a catalyst for change in the area, encouraging the growth of industrial and consumer tech companies. In fact, before moving to Silicon Valley in January 1991, Hinman, who was raised in Wheaton, Md., looked at returning to the Washington area, which he considers home. But he didn’t see the

infrastructure in the region to support the types of high-tech products he planned to market to businesses and consumers.

“The ultimate measure of the program’s success will be the start of new companies that create a substantial number of jobs in the D.C. area,” Hinman said.



Brian Hinman

Biography

Brian L. Hinman joined Oak Investment Partners as a Venture Partner in 2006. Hinman is the co-founder, and formerly the President and CEO, of 2Wire, a provider of broadband service platforms for the DSL market. He is also the co-founder, and formerly the CEO, of Polycom, Inc., (NASDAQ: PLCM) the world’s leading teleconferencing company. Hinman was the co-founder of PictureTel Corporation (formerly NASDAQ: PCTL) at the age of 22, pioneering the video compression technology that has endured into the standards of today. He is an engineer by training, a specialist in digital signal processing, and holds twelve U.S. patents. Hinman has received several awards for entrepreneurship, including being named an Entrepreneur of the Year by Ernst & Young in 2005. He currently serves on the board of directors of two Oak portfolio companies, Qpixel Technology and 2Wire. Hinman has previously served on the national board of the American Electronic Association, and was co-founder and director of the International Multimedia Teleconferencing Consortium (IMTC). He holds a B.S.E.E. Summa Cum Laude from the University of Maryland, and an S.M.E.E. from M.I.T.

Award-winning, living-learning entrepreneurship program for undergraduates

Entrepreneurship Starts Young

Second-Year Summer, High School Entrepreneurship Course Draws 27 Students from Across the Country

MTECH Ventures' James V. Green taught the second year of the Washington Metropolitan Region's first entrepreneurship course for high school students offered by a major university.

Entitled "ENES 140: Discovering New Ventures—Foundations of Entrepreneurship," the course, offered through the University of Maryland's Young Scholars Program, gives high school students the opportunity to explore dynamic business and technology topics by working in teams to design new businesses.

The class of 27 students came from Bethesda, Md. (2); Boyds, Md.; Germantown, Md.; Olney, Md.; Potomac, Md.; Rockville, Md.; Silver Spring, Md.; Indian Head, Md.; Columbia, Md. (2); College Park, Md.; Mclean, Va.; Malvern, Pa.; Basking Ridge, N.J.; Cherry Hill, N.J. (3); Morganville, N.J.; Plainsboro, N.J.; Scarsdale, N.Y.; Melville, N.Y.; Briarcliff Manor, N.Y.; Uniondale, N.Y.; Lighthouse Point, Fla.; Lawrence, Kan.; and Corpus Christi, Texas.

Seven student teams presented plans for companies:

- Bluetooth-based canal headphones enabling users to connect wirelessly to music devices and phones, with music auto-pausing for phone calls
- New, two-in-one washer-dryer combo with retractable venting for better heat disbursement, improved shock absorbers and welds for reduced noise, decreased size, and shorter load completion times
- eBay counterfeit monitoring for purchases of designer clothing and accessories
- Health-food store and café with in-house nutritionists and product-expert staff able to customize nutrition for all patrons
- Graphic design services catering to small businesses who feel current marketing options aren't inclusive enough for them
- Neighborhood-based movie rental chain using monthly fees and no late charges
- Instantaneous, Web-based movie and game downloads with monthly or one-time fees



Entrepreneurship Education: Big Impact

Just six years after launching its first entrepreneurship education initiative, MTECH Ventures now offers eight distinct programs designed to encourage entrepreneurship through education.

Those programs include four courses (with two more coming in the spring), the University of Maryland Business Plan Competition, the University of Maryland Technology Start-Up Boot Camp, Hinman CEOs, Hillman Entrepreneurs, and the MTECH Venture Forum.

In 2006, MTECH Ventures offered 11 course sections, reaching 373 students. Overall, MTECH Ventures' education activities reached over 1,000 faculty and students in 2006.

MTECH Venture transforms technology creators into 21st Century Innovation Leaders. We believe technology students, faculty, and researchers benefit significantly from a grasp of entrepreneurial practices and tactics. Entrepreneurial technologists, whether inside a university, government lab, established company, or startup, are well-positioned to develop and commercialize innovations that contribute to economic expansion.

New for 2007!

- ☑ **Honors course in entrepreneurship (Spring)**
- ☑ **Freshmen Connection course in entrepreneurship (Fall)**
- ☑ **BIOE 645 graduate course in tech entrepreneurship (Spring)**



Steve Fredrick, Grotech Capital Group, speaks at the MTECH Venture Forum

Encouraging entrepreneurship through education:

Discrete entrepreneurship education programs	8
Course sections offered (2006)	11
Course enrollment (2006)	373
Technology Start-Up Boot Camp registrants ('06)	404
Business Plan Competition submissions	300
Hinman CEOs, students since inception	280
MTECH Ventures Forum registrants (2006)	185

MTECH Ventures Courses

- **ENES 140 – Discovering New Ventures:** freshman-level course designed to attract rising high-school juniors and seniors. In a partnership with the University's summer Young Scholars Program, high school students earn college credit in a residential academic program.
- **ENES 460 – Fundamentals of Technology Start-Up Ventures:** students learn the processes and skills needed to launch and manage new ventures. Students learn how to assess the feasibility of a startup venture, as well as how to apply best practices for planning, launching, and managing new companies.
- **ENES 489B – VentureCatalyst Entrepreneurship Lab:** places students on teams to commercialize University-developed technology. Ideas are sourced from faculty and graduate students working with innovative technologies.
- **ENES 498 – Special Topics in Entrepreneurship: Real-Life Cases in Technology Venturing:** seminar and case study-based course exploring technology entrepreneurship with a focus on leadership, product design and development, and strategies to launch and manage technology ventures.

Entrepreneurs Go to Boot Camp

MTECH Ventures-Hosted University of Maryland Technology Start-Up Boot Camp Attracts 404 from 23 Universities

Aspiring entrepreneurs packed the Stamp Student Union in November for the MTECH Ventures-hosted University of Maryland Technology Start-Up Boot Camp.

A comprehensive, one-day workshop and networking event about how to successfully launch a technology-based company, the event drew 404 participants from 23 universities, federal laboratories, and the business community.

Topics for the workshop included: "Should You Take the Leap," by Brownell Chalstrom, Venture Partner, Avansis Ventures; "What is Technology Entrepreneurship," by Jonathan Aberman, Managing Director, Amplifier Venture Partners; "Incredible Idea or Real Business?" by Andrew Scherer, CEO, Scherer Cybrarian Services; "Teams, the Most Important Asset in a New Business," by Martin Knott, Managing Director, The Shepherd Group; "Financing Your Venture," by Christopher Foster, Deputy Secretary, Maryland Department of Business and Economic Development and John P. (Jack) Hollerbach, President, HarVest Bank of Maryland; and "Keys to Success," by Mark Kass, Member, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo P.C.; Srinivas Mirmira, Associate, RedShift Ventures; and Anik Singal, CEO, Affiliate Classroom.

A specially designed networking lunch featured a Boot Camp speaker at each standing table.

The afternoon featured breakout sessions on intellectual property and authoring a business plan, by Fish & Richardson and the Maryland Technology Development Corporation, respectively.

Participants also took advantage of one-to-one mentoring during the afternoon.

Sponsors for the Boot Camp included Fish & Richardson P.C.; Mintz, Levin, Cohn, Ferris, Glovsky and Popeo P.C.; the Maryland Department of Business and Economic Development; and Administaff. Supporting organizations included the Greater Baltimore Technology Council, the Maryland Technology Council, the Consortium of Universities of the Washington Metropolitan Area, and the Entrepreneur Center@Northern Virginia Technology Council.



Business Plan Competition Winners Offer 2-D Barcodes, Electronic Receipts, Affiliate Marketing Training

UM \$50K Business Plan Competition Yields Promising Start-Ups

MTECH Ventures hosted its sixth annual University of Maryland \$50K Business Plan Competition last spring.

Six finalist team presented their business plans to a distinguished panel of judges. Winners were selected in three categories: undergraduate students, young alumni, and faculty and graduate students.

Faculty & Graduate Student Category

First Place—Winner of the Maryland Department of Business and Economic Development Award and \$15,000: Advanced Magneto-Optical Systems will provide technology compatible with current optical scanners that will enable the use of two-dimensional hidden magnetic barcodes and other authenticity marks to enhance the security of critical identity products such as credit cards, checks, banknotes, drivers' licenses, medication packages and other manufactured components.

- Mr. Iulian Nistor, research assistant, Department of Electrical and Computer Engineering
- Dr. Isaak D. Mayergoyz, professor, Department of Electrical and Computer Engineering
- Dr. Carsten Holthaus, research associate, Department of Electrical and Computer Engineering

Runner-Up—\$3,000 Winner: Metatropi has developed a patent-pending metabolomics technology that enables highly accurate and simultaneous



Advanced Magneto-Optical Systems team, from left to right: Dr. Isaak Mayergoyz, Charles Krafft, Dr. Carsten Holthaus, and Iulian Nistor, along with Elizabeth Good Mazhari and Karen Thornton.

measurement of hundreds of metabolites (e.g. glucose, amino acids) in biological systems, for uses such as early disease diagnosis, personalized nutrition and medicine, functional genomics, and safe use of genetically modified food.

- Harin Kanani, founder, Ph.D. candidate, Department of Chemical and Biomolecular Engineering, expected graduation December 2006
- Dr. Maria Klapa, founder, adjunct assistant professor, Department of Chemical and Biomolecular Engineering

Undergraduate Student Category

First Place—\$12,000 Winner: I-Receipts is planning a service that eliminates paper receipts for consumers and businesses by providing instant database and Internet access to purchase information.

- Michael Altman, senior, Department of Electrical and Computer Engineering, Hinman CEO
- Sam Fine, senior, Department of Finance, Hinman CEO

Runner-Up, \$2,000 Winner: ORBSolution.com (Online Realty Business Solutions) aims to be the first nationwide listing database for real estate agents, offering easy-to-use agent web hosting, a “Real Estate in a box” package for companies, and a national property database.



I-Receipts team, from left to right: Michael Altman and Sam Fine, along with Karen Thornton and Karl Renner.



Affiliate Classroom team, from left to right: Helen Montgomery and Anik Singal, along with Karen Thornton and Steve McVeary.

- John Karvounis, Department of Electrical and Computer Engineering, Hinman CEO, expected graduation May 2007
- John Wyrwas, departments of Electrical and Computer Engineering and Physics, Hinman CEO, expected graduation May 2007
- William Lai, departments of Computer Science and Mathematics, Hinman CEO, expected graduation May 2007
- Peter Orlicki, departments of Finance and Electrical and Computer Engineering, Hinman CEO, expected graduation May 2007

Young Alumni Category

First Place—\$15,000 Winner: Affiliate Classroom provides an online training facility for web-based affiliate marketing, a risk-free form of advertising through which an online merchant rewards an affiliate site for every visitor, subscriber, and/or customer referred to the merchant—much like a finder’s fee.

- Anik Singal, Founder & CEO, University of Maryland alumnus, May 2005, Finance major and Hinman CEO

Runner-Up, \$3,000 Winner: Vfore is developing a content-based image organizer and search engine capable of finding images based on their content—the objects or people in the images—first as a desktop-

based image organizer, and then as an Internet-based search engine.

- Gaurav Agarwal, alumnus, master’s degree, Department of Electrical and Computer Engineering, 2005
 - Sameer Shirdhonkar, Ph.D. candidate, Department of Computer Science, expected graduation 2008
- Finalists were selected from 16 semifinalists and 58 initial entries.

Judges for the event were: Henry Ahn, Program Manager, Technology Funding Programs, Maryland Technology Development Corporation; Elizabeth Good Mazhari, Managing Director, Maryland Venture Fund; Rich Harris, Managing Director, SpaceVest; Karl Renner, Principal, Fish & Richardson P.C.; and Steve McVeary, Member of the Business and Finance Section, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo.

The UM \$50K Business Plan Competition is sponsored by the Maryland Department of Business and Economic Development, Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, and Fish & Richardson P.C.

The competition, now in its sixth year, has historically awarded a total of \$285,000 in prizes to faculty, students and alumni with the best plans for innovative ventures. Previous winners have generated millions in revenues, grants and awards.

MTECH Ventures, Prince George's Community College Partner for New, Four- Year Entrepreneurship Program

\$1.7 Million Gift from David H. and Suzanne D. Hillman Family Foundation Creates New Initiative

David Hillman believes the future leaders of Maryland should hunger to find better ways to do things. By founding the new Hillman Entrepreneurs Program, Hillman plans to find those leaders, and prepare them to think in ways that effect positive change.

"To me an entrepreneur is not necessarily a person who owns a business," said Hillman. "He or she thinks out-of-the-box, questions the status quo, and tries to find new and better ways to do things. We're trying to help educate the future leaders of our country."

The Hillman Entrepreneurs Program, officially launched this fall, offers scholarships and entrepreneurship courses for select students who begin their education at Prince George's Community College and complete their bachelor's degree at the University of Maryland. MTECH Ventures will manage the Hillman Program at the university.

The four-year Hillman Entrepreneurs Program is offered to students who want to start a business, but might not be able to pursue a college career without assistance.

"We have two visions for the program," said Hillman. "First, we started in PG County. We feel a strong obligation to support the community. Second, we believe entrepreneurial thinking is one way to influence the future of PG County, Maryland and our region in a positive way.



Hillman Entrepreneurs student Trevor Young.

"That's the way we run our business [Southern Management Corporation]. We're a learning company that offers goal-oriented technical training, as well as professional and management development experiences to our employees. We teach people to think entrepreneurially, and to crave and thrive on responsibility.

People respond to the way they're treated. If you give them the tools to excel, they will excel."

Students in the Hillman Entrepreneur Program may pursue any course of study except pre-law. Hillman Entrepreneurs receive special coursework and programs to nurture their entrepreneurial skills and spirit; intensive mentoring; business internship opportunities; merit scholarships of \$500 at PGCC and \$1,000 at Maryland; and need-based scholarships to cover up to 100 percent of the annual cost for tuition and books.

Twenty second-year Prince George's Community College students entered the program this fall; new first-year students will also be selected in spring 2007 for the next cohort. The first class will transfer to Maryland in fall 2007.

During the subsequent three years of the pilot program, up to 30 students will enter the Hillman Entrepreneurs Program each fall as first-year PGCC students. These students will be selected from a pool of highly qualified students accepted for enrollment at Prince George's Community College.

"This new program means a lot to me," said Hillman Entrepreneurs student Chae Clark, who is a member of

A nucleus for innovation-based entrepreneurship



Photos by Mike Morgan

David Hillman, right, Lisa Rawlings, program director for the Hillman Program at PGCC, and the inaugural program class.

the Science, Technology, Engineering, and Math (STEM) Collegian Center at Prince George’s Community College and director of finance and budget for the school’s Student Program Board.

“I love business and always have ideas for new businesses,” Clark explained. “However, people don’t always have an opportunity to carry out their ideas. Before I got into the Hillman Entrepreneurs Program, I wasn’t sure if I would be able to realize my goals and transfer to a four-year school. The Hillmans are the reason I’m getting into Maryland,” said Clark, who sent David Hillman a note thanking him for his “generosity” and “for creating such a worthwhile program.”

Hillman believes the worth of the program is a combination of the value of a four-year degree and the character it will build.

“We want to take people in this program, who may not have another opportunity, and get them an education,” said Hillman. “We also want to give them the confidence to fail, to try, to walk different than anybody else.

“We want to create well-rounded people who can change the world,” he continued. “We’re not just writing a check and walking away. We hope it’s so successful that every other local company will want to emulate it.”



Hillman student Chae Clark, MTECH Director Herb Rabin, University of Maryland Hillman Program Director Karen Thornton, and Hillman student Kizzah Knight.



Hillman Entrepreneurs inaugural class.

www.hillman.umd.edu

Trufina Expands, Builds Product, Partnerships

Trufina Inc., an online Identity Verification and management service company joining the MTECH Ventures portfolio in 2004, has progressed significantly in the past nine months.

Trufina allows consumers to self verify their personal information, as well as many other attributes of their identity, and have complete control over who has access to their information. By putting users in control of their own information, Trufina provides a unique way to establish trust online and build trusted communities.

Recent Trufina highlights include:

New Hires to Executive Team

Kurt Baumann, Gaige Paulsen, Donna Hemmert, and Nick Kovacic have joined Trufina, enabling the company to expand its efforts, specifically in the area of sales and marketing.

Product Expansion

- **Added new ID management capabilities.** Trufina members can now create various 'ID Cards' and share them with anyone they wish.
- **Completed and launched an affiliate program (affiliate.trufina.com).** Trufina signed up its first several affiliate partners. This program utilizes banner ads, tracking of originating URLs, and payment to affiliates. The company also optimized its site for Google searches, is using Google Adwords, and is in the process of joining several other affiliate programs (such as Commission Junction and Azoogle).
- **Relaunched Trufina Web site in August.** The site is now more tailored to the end consumer. Trufina has also built out its Partner section, and is continuing to improve and enhance upon it.
- **Working on implementations of OpenID and Cardspace.** These two potentially great

technologies will allow Trufina members to share their ID's with more sites. The more they are adopted, the more Trufina will benefit.

- **Developing custodial accounts, allowing parents them to set up Trufina accounts for their children.** This functionality will also have business applications (i.e. a CEO can get verified and then create accounts for all his/her colleagues). Trufina plans to use this feature to create marketing campaigns directed at parents, as well as teenagers at Myspace.com.
- **Trufina is implementing a renewal process for users;** this will be the basis for the company's periodic re-verification of users' identity data.



New Trufina Web site:
www.trufina.com

Trufina Featured on CBS Early Show, in Wall Street Journal

Trufina Inc. was featured on the *CBS Early Show* on Saturday, August 19.

Regina Lewis, AOL Consumer Advisor, talked about the challenges of trust on the Internet as it relates to online dating, social networks (such as Myspace.com), and on the Internet in general. Regina explained how services such as Trufina can validate the identity



Leading venture incubator for early-stage technology companies

of persons you are interacting with on the Internet.

With Trufina, identity information is verified so users can trust that a Trufina user is who they say they are.

Trufina was also featured in *The Wall Street Journal* earlier this fall; the article is linked from the Trufina Web site.

www.trufina.com



Captures of the CBS and Wall Street Journal stories about Trufina

and IBI scientists to be recognized by *The Daily Record*, an award-winning paper with a distinguished history," said Joe Hernandez, IBI's Founder and CEO. "Our rapid, ultra-sensitive CANARY™ technology will enable us to revolutionize pathogen testing in the industries we serve, such as human clinical diagnostics and biodefense."

Innovative Biosensors is also a Maryland Industrial Partnerships (MIPS) Program funding recipient.

Innovative Biosensors Expands A Round Financing to Total of \$6.25 Million

Innovative Biosensors Inc. (IBI), an MTECH Ventures portfolio company developing rapid, ultra-sensitive tests to detect harmful pathogens, today announced that it has expanded its A Round to \$6.25 million in total financing with additional investors, including Chart Venture Partners and CNF Investments, LLC, an affiliate of Clark Enterprises, Inc. (CEI).

In May 2005, IBI closed its first round of Series A financing, which was led by Harbert Venture Partners. Other investors in that round included the New Markets Growth Fund and the Maryland Venture Fund.

The company will use the additional financing to fund the development of human clinical assays and commercialization of biodefense testing products.

In conjunction with the additional financing, IBI will welcome Joseph Del Guercio of CNF Investments, LLC, and Cole Van Nice, of Chart Venture Partners, to the Board of Directors.



Innovative Biosensors Receives *The Daily Record's* 2006 Innovator of the Year Award

Innovative Biosensors Inc. (IBI), an MTECH Ventures portfolio company developing rapid, ultra-sensitive tests to detect harmful pathogens, announced that it is one of several recipients of *The Daily Record's* Innovator of the Year 2006 Award.



During a September 27 reception, IBI's President and CEO, Joe Hernandez, and IBI's scientific team were recognized for contributions to pathogen detection. IBI's versatile CANARY™ technology was developed by scientists at MIT; IBI's scientists now work closely with MIT to adapt the technology to the needs of various industries in need of rapid detection.

"It is an honor for the development efforts of MIT

www.innovativebiosensors.com

DataStream Content Solutions Grows from TAP

Company is Second to Join MTECH Technology Ventures Building

When DataStream Content Solutions LLC joined the Technology Advancement Program in 2000, few imagined it would increase its revenue more than ten fold in five years, as well as create 20 new high-tech jobs.

That growth has driven the company to acquire new office space in the MTECH Technology Ventures Building, the first corporate space offered in the University of Maryland's M Square research park.

"This is fantastic, permanent space with room for us to double our staff again," said DataStream President Mark Anstey. "The research park is a perfect location—with excellent access to road and rail transportation, as well as its proximity to the University for technology and staffing purposes."

The new offices, occupying the entire top floor of the Technology Ventures Building, feature a capacious 5,500 square feet of meeting rooms, workspaces, and administrative offices, replete with panoramic views of the historic College Park Airport.

DataStream specializes in applying eXtensible Markup Language, or XML, to many types of data, helping manage or repurpose that data for Web publishing, hard copy distribution, report generation, or for populating databases. XML tagging makes data accessible across a wide range of machine platforms, according to Anstey.

DataStream's success stems from the company's ability to deliver critical information quickly and accurately. Over the past five years, the company has played an important role in building advanced legislative data systems for the both the U.S. House of Representatives and Senate. DataStream has won more XML-based contracts with the legislative branch



DataStream President Mark Anstey and Chief Information Officer Ed Schulke

Photo by Ron Solomon

than any other company in the Washington area, according to Anstey.

DataStream's customers also include Lexis-Nexis, GuideStar, and Congressional Quarterly.

In 2004, DataStream acquired Potomac Publishing, enabling the parent company to become an electronic publisher in its own right. DataStream then took Potomac Publishing's original asset, an electronic database of federal statutes dating back to the first U.S. Congress in 1789, and expanded it into an online service with expansive additional content, including a groundbreaking legislative impact tool that offers real-time analysis of how proposed federal legislation impacts existing law.

Congressional Quarterly, one of the country's oldest news organizations specializing in covering federal legislation, licensed Potomac Publishing's legislative impact product and launched it on CQ.com in July, 2006.

"2007 is shaping up to be an exciting year," said Anstey. We have new opportunities in the financial services and legal publishing industries. We're expecting revenue and employment to double again over the next year."

www.dscs.com

www.potomacpublishing.com

Leading venture incubator for early-stage technology companies

Applied Media Analysis Inc. Joins TAP

Company's Technology Enables Smart Vision in Mobile Devices

By Lindsay Mize

Applied Media Analysis Inc., a company developing advanced mobile vision technologies for handheld devices, joined the Technology Advancement Program (TAP), a leading venture incubator partnering with entrepreneurs to build early-stage companies, this fall.

"TAP has an excellent track record of assisting companies with business development and fund-raising," said Dr. David Doermann, co-founder and president of AMA, and co-director of the Laboratory for Language and Media Processing in the University of Maryland's Institute for Advanced Computer Studies. "We look forward to growing our business along with TAP's talented team."

AMA's patent-pending technology gives camera-enabled handheld devices smart vision—enabling them to translate documents, enlarge text for the visually impaired, read and translate signs, scan business cards, read and process bar codes, and both read and interpret medication instructions.

"People have traditionally used camera phones to snap low-quality pictures and e-mail them to friends," said Scott Laughlin, director of the university's VentureAccelerator Program. "With AMA's applications, you can now use your camera-enabled phone or PDA to do new and useful things, such as reading barcodes and translating foreign text. The company is opening a new realm for inexpensive, consumer mobile devices."

When images need to be analyzed or used, they are typically sent to a computer to do the processing, according to Laughlin. AMA's software makes this possible on resource-limited devices.

"It's very easy to perform computer vision if you have substantial processing power, consistent light for imaging, and a known symbology," said Laughlin. "AMA

is working on the very hard end of the spectrum—using both low processor power and a camera functioning without a consistent light beam. An AMA-enabled mobile device can interpret anything it's looking at, as long as you tell it what it's looking for."

AMA has received \$1.5 million in grant and research funding to move its technology forward. Funding agencies, through Small Business Innovative Research (SBIR) program grants, include the U.S. Army, Defense Advanced Research Projects Agency, National Science Foundation, Department of Education, and National Institutes of Health.

AMA recently unveiled its new V-Code (video code) product. V-Code enables both businesses and consumers to use camera-enabled mobile devices for rapidly extracting and viewing information from two-dimensional product barcodes—including reviews, coupons, prices and sales information. Video 2D barcodes also give commercial vendors the ability to pack more information into a product's barcode.

The second product AMA plans to launch is a commercial language translator, which will instantly translate the text of anything photographed by a mobile device. The product is slated for a mid-January release.

AMA entered the university's VentureAccelerator Program, which offers faculty and student inventors intense, hands-on business assistance, last year. The company recently graduated into TAP.

"TAP is committed to helping AMA execute its business plan," said Sarah Djamshidi, associate director for TAP. "Our goals are to specifically focus on incremental fund-raising and augmenting the company's management team."



Rendering of AMA's V-Code technology for camera-enabled devices

www.appliedmediaanalysis.com

Guardian Angel for Firefighters

Company Developing Advanced Tracking and Monitoring Technology Joins TAP

By Megan Hartley

TRX Systems Inc., a company developing technology to monitor firefighters, joined the Technology Advancement Program's portfolio in November.

Once a firefighter bursts through the charred frame of a burning building, each second spent looking for victims could be deadly. With the help of TRX Systems' Fire Sentinel System, fellow firefighters from the outside can monitor the position and movement of their embedded co-workers.



"The TRX Sentinel Base Station can see not only where firefighters are, but also their physical status, including whether they've been hit by something, or have fallen through a floor and are lying on their back," said Ben Funk, vice president of development for TRX Systems.

TAP will give the emerging company the space and mentorship needed to evolve into a successful venture.

"Our due diligence indicates their technology exceeds any product currently offered on the market," said Sarah Djamshidi, associate director of TAP. "Our initial focus will be to help TRX Systems raise capital and expand its business development team—both with the goal of enabling the company to rapidly bring its product to market."

Approximately 100 firefighters die each year in the line of duty, according to the U.S. Fire Administration. The terrorist attacks of September 11, which claimed the lives of 343 paramedics and

firefighters, spurred the Department of Homeland Security to request devices that track rescue professionals indoors.

Accurate indoor tracking makes the TRX Fire Sentinel unique. The system combines GPS—which only works outdoors—with an inertial navigation unit—which works indoors and outdoors—to create an integrated tracking system for all environments.

"Inertial navigation was originally used on missiles and airplanes, but with the help of MEMS

technology we are able to compact it into the size of a pager," said Gilmer Blankenship, chairman of TRX Systems and a professor in the Department of Electrical and Computer Engineering.

When the TRX Fire Sentinel base station detects that a firefighter is about to walk into a dangerous area,

it can send an evacuation signal. Firefighters can also send alarms when they get into trouble.

"We have developed technology to directly communicate with the firefighters, but our top priorities are tracking and locating," said Blankenship.

TRX Systems has received contracts from the National Security Agency, the National Science Foundation, TEDCO, and Techno-Sciences, Inc. for a total sum of more than \$700,000.

"Working with TAP establishes us as a legitimate start-up company, so we don't look like guys working out of a garage to potential investors," said Blankenship. "A lot of people are anxious to acquire this life saving technology; I have had calls from Singapore and the UK requesting it."

TRX's management team also includes President Neil Goldsman, a professor in the Department of Electrical and Computer Engineering, and Vice President Carole Teolis.

www.trxsystems.com

Leading venture incubator for early-stage technology companies

Pixelligent Wins 2006 Maryland Incubator Company of the Year Award

Pixelligent Technologies LLC, an MTECH Ventures portfolio company developing nano-materials for semiconductor lithography, received the 2006 New Incubator Company of the Year Award.

The award was one of six presented at the annual Maryland Incubator Companies of the Year Awards in June.

Judges considered each company's technology or product development; increase in employee numbers; growth in revenue or earnings; engagement of significant customers and strategic partners; technology transfer; receipt of awards or grants; attraction of outside investors; innovation; selfsufficiency; impact on the region; and ability to use an incubator's services. to its information.

The awards were sponsored by the Maryland Department of Business and Economic Development (DBED), the Maryland Technology Development Corporation, RSM McGladrey, Inc., and Saul Ewing LLP

Pixelligent has developed proprietary nano-materials which dramatically extend the useful life of semiconductor optical lithography infrastructure without significant capital expenditures.

Started by Gregory Cooper, a University of Maryland alumnus (Ph.D., physics), Pixelligent has raised over \$2 million in funding and completed multiple strategic partnerships with leading semiconductor materials firms.

Pixelligent was also selected as a summer 2006 MIPS funding recipient.

www.pixelligent.com

AnthroTronix to be Mentored by Lockheed Martin

MTECH Ventures portfolio graduate AnthroTronix Inc. will be mentored by

Lockheed Martin (NYSE: LMT) for three years in developing a robot control system through a \$1.9-million, three-year contract awarded by the U.S. Department of Defense Joint Robotics Office.

Under the agreement, Lockheed Martin Advanced Technology Laboratories (ATL) will help AnthroTronix, a small, privately held, woman-owned business in Silver Spring, Md., develop a Joint Architecture for Unmanned Systems (JAUS)-compliant robot control system. Called the Multi-Purpose Autonomous Teaming Control of Heterogeneous Robots (MATCH), the system will control heterogeneous teams of robots performing diverse sets of force-protection tasks for Air Force Research Laboratory.

Sponsored by the DoD's office of small business programs, the Mentor-Protege Program provides incentives for large defense contractors to share knowledge with small and disadvantaged businesses, organizations that hire people with severe disabilities, and minority-owned small businesses. The program enhances the ability of protege companies to win contracts and help the armed forces transform into a more agile, versatile, survivable and sustainable force. The program also helps eligible proteges transition from subcontractors to prime contractors.

"The entire team at AnthroTronix is excited about working with one of the nation's premier defense contractors to support the challenging and important needs of the Joint Robotics Program," said Dr. Corinna Lathan, AnthroTronix president, co-founder and chief executive officer. "We look forward to a successful and prosperous partnership."



www.anthrotronix.com

VentureAccelerator: A Tale of Two Burgeoning Companies

Just one year after joining the VentureAccelerator Program, Affiliate Classroom is positioned to earn more than \$1 million in revenue this year. The company has expanded its product line and is well-positioned to lead its industry.

Applied Media Analysis Inc. has won three, phase-one Small Business Innovation Research grants, hired five employees (including a director of business development), released a software development kit, focused its business model, and was accepted into the Technology Advancement Program.



Anik Singal, founder and CEO of Affiliate Classroom, and Scott Laughlin, director of VentureAccelerator

Affiliate Classroom

Founded

2004; joined VA in 2005

Who's in charge

Anik Singal, Founder & CEO, University of Maryland alumnus, May 2005, finance major and Hinman CEO

Web site

www.affiliateclassroom.com

Big Idea

"The idea was to provide a training community for one of the fastest growing marketing channels in the world. We wanted to build a professional community where everyone could help each other grow," said Anik Singal, president and founder of Affiliate Classroom.

How it works

Affiliate Classroom provides an online training facility

for web-based affiliate marketing, a risk-free form of advertising through which an online merchant rewards an affiliate site for every visitor, subscriber, and/or customer referred to the merchant—much like a finder's fee.

"We keep our members up-to-date with all the latest changes in the industry and teach them how they can increase production through better conversations and more traffic generation," said Singal.

Where you see yourself in five years?

"We see ourselves at the center of the industry helping bring together the various players and creating profitable relationships," said Singal.

Funding

"We are completely bootstrapped from a \$100 investment I made years ago," said Singal.

Customers

"So far we have had well over 10,000 customers and are servicing nearly 2,000 customers at any point in time," said Singal.

Partnerships

The company is negotiating potential collaborations with key industry partners.

How did VentureAccelerator help you?

"Venture Accelerator vastly increased my vision for both the business and the market opportunity," said Singal. "Scott Laughlin has been an immense help in establishing the corporate structure of the company and getting us ready for funding in the near future."

What's Next?

"We are preparing the company for equity funding and also networking to bring in the right management group," said Singal.

Intense, hands-on assistance for faculty and students launching new technology ventures

Applied Media Analysis (AMA)

Founded

2000; incorporated in 2004, joined VA in 2005

Who's in charge

David Doerman, co-founder and president of AMA, co-director of the Laboratory for Language and Media Processing in the University of Maryland's Institute for Advanced Computer Studies; Huiping Li, Ph.D: co-founder and chief technology officer; Andy Bucholz, director of business development.

Web site

www.appliedmediaanalysis.com

Big idea

AMA's patent-pending technology gives camera-enabled handheld devices smart vision—enabling them to translate documents, enlarge text for the visually impaired, read and translate signs, scan business cards, read and process bar codes, and both read and interpret medication instructions.

How it works

AMA's software enables resource-constrained devices, such as cell phones and PDAs, to perform complex computer vision analysis—analyzing images and translating text or other information—actions that usually require a powerful computer.

Funding

AMA has received \$1.5 million in grant and research funding to move its technology forward. Funding agencies, through Small Business Innovative Research (SBIR) program grants, include the U.S. Army, Defense Advanced Research Projects Agency, National Science Foundation, Department of Education, and National Institutes of Health.

How did VentureAccelerator help you?

"VA primarily focused our business opportunities and allowed us to explore specific areas of the market," said Doerman. "Scott helped us look into both the consumer and business-to-business-to-consumer markets, so we can integrate our product into other groups who have existing workflow solutions." AMA has also filed

for provisional patents, hired five employees, won SBIRs, released its SDK for developers, and entered TAP.

What's Next?

In the Fall 2006, AMA launched a commercialization arm, MobileAMA, to drive mature products to the marketplace. The company also released its patent-pending V-Code (Video-Code) technology in early December, which allows camera phone users to download content directly from video 2D barcodes. Users will be able to point their camera phones at V-code to download files without cables, networks, or paying service providers. AMA's second product, slated for a January release, will be a commercial language translator, which can instantly translate the text of anything photographed by a mobile device.



AMA
language
translator
prototype

About VentureAccelerator

VentureAccelerator is a venture creation assistance program that systematically guides technical entrepreneurs from invention to venture. Through its methodology, VentureAccelerator helps inventors significantly reduce the risk of failure in the creation of a new business and its first year of operation.

VentureAccelerator delivers risk reduction by using a powerful combination of best practices, mentorship, networking, leveraged University resources and the investment of social capital.

Founders generally travel through the program within 18 months. After this period, the new company is expected to "graduate" from the Program and either compete for further resources from other MTECH programs such as TAP, or commence operations in a commercial environment.

www.va.umd.edu

MIPS Projects with Hughes Network Systems, John Baras Create New, Multi-Billion Dollar Internet-Over Satellite Industry

It seems like yesterday to John Baras. It was 1993. Though the Internet was known to researchers, no AOL disks had yet slipped their way into households. PCs and the Internet had yet to be married.

But Germantown-based Hughes Network Systems contributed \$20,000 in cash to a \$43,000 project with Baras, a professor in the Department of Electrical and Computer Engineering and Institute for Systems Research, which would one day make broadband-over-satellite Internet possible.

“No one thought the Internet would work over satellite,” said Baras. The protocols just weren’t made for that medium.

Four short years later, in 1997, Hughes launched DirecPC (now called HughesNet), the first consumer product/service to offer Internet access via satellite.

Fast forward to 2006. Internet-by-satellite is now an industry unto itself. Over 2 million broadband over satellite terminals are installed worldwide, according to John Kenyon, Senior Vice President for Engineering at Hughes. The protocols developed by Baras and Hughes are now called TIA-1008, a standard adopted intact by the European Telecommunications Standards Institute.

“More terminals operate under this standard than

“MIPS helped develop not just a new product, but a new industry.”

—John Kenyon, senior vice president for engineering, Hughes Network Systems



any other,” said Kenyon. “We’ve shipped over one million terminals under those protocols. Our business represents about 55 percent of the total worldwide business in broadband satellite terminals.

“MIPS helped develop not just a new product, but a new industry,” said Kenyon. “Ten years ago a satellite terminal was \$5,000. Today we’re below \$1,000. We’re on the road to \$500.”

That’s not to mention Hughes’ growth.

“Over time, we’ve probably generated within the state of Maryland, a large share of our revenue” said Kenyon. Several billion of that can be directly credited to the work done through MIPS. We employ 1,500 people here in the state. Many of them are working on businesses related to this technology.

“If Annapolis looks at the value of the MIPS program to Maryland companies and the Maryland economy, they’ve done a lot,” said Kenyon.

But economic impact isn’t the whole story, said Baras. “Vincent Cerf was just here [at the University] talking about the Internet covering the planet. That’s what we were doing. Satellites are the key.



Faculty-led research projects to help Maryland companies develop technology-based products

They can provide strong support for disaster relief, e-government, e-health, e-commerce, and e-education.”

Hughes recently partnered with Microsoft to bring 5,000 broadband-enabled kiosks to rural parts of India. Hughes is also rolling out broadband Internet access in 800 schools in Brazil.

Former electrical engineering graduate student Aaron Falk worked with Baras and Hughes’ Doug Dillon to turn conventional wisdom on its head and develop asymmetric Internet protocols—which send data to

the satellite at one speed, and down to a modem at another—for use over satellite. Prevailing theory at the time held that long latency would make this impossible.

“In one sense you could say that the breakthrough on the protocols basically created this whole industry,” said Kenyon.



Professor John Baras

“We opened up Internet over satellite,” said Baras. “It was pioneering at the time. People were thinking of satellites for long-haul voice calls and television. We basically used the satellites as a node over the Internet.”

The work also gave Baras the chance to work on something that went straight into a commercial product.

“It was tremendous to work with Hughes because we could take our theories and implement and test them right away,” said Baras. “We got to innovate and go straight to industry.

“The project gave us the traditional academic rewards of papers and research, but we were solving a problem people thought could not be done.”

“Over time, we’ve probably generated within the state of Maryland, a large share of our revenue” said Kenyon. Several billion of that can be directly credited to the work done through MIPS. We employ 1,500 people here in the state. Many of them are working on businesses related to this technology.”

—John Kenyon, senior vice president for engineering, Hughes Network Systems

Over 30 papers were published as a result of the MIPS work with Hughes, according to Baras. Hughes has conducted 15 total MIPS projects with the university.

Falk now chairs the Internet Research Task Force, which promotes research of importance to the evolution of the future Internet. He has chaired the Internet Engineering Task Force (IETF)’s working groups on TCP over Satellite, Performance Implications of Link Characteristics, and Datagram Congestion Control Protocol.

www.hns.com

Other Successful Products MIPS Projects Have Contributed To

Company	Product	Revenue/Sales
Martek Biosciences	DHA and ARA nutritional oils	\$784.5 million
MedImmune	Synagis®	\$6 billion
Black & Decker	Bullet® Speed Tip Masonry Drill Bit	\$21 billion (total 2001-2005 Power Tools and Accessories sales)



MIPS Receives \$1 Million Funding Increase

Up to 22 More Md. Companies, Faculty Could Benefit Annually

The state of Maryland backed a high-yield economic development initiative, the Maryland Industrial Partnerships (MIPS) program, in 2006 with a \$1 million funding increase.

The increase extends the reach of a program with a \$12.1 billion economic impact on the Maryland economy by almost twofold.

MIPS selects about 32 research projects each year teaming university faculty with Maryland companies to develop commercial products. The approved increase nearly doubles the program's \$1.3 million annual budget, enabling the support of up to 22 additional projects yearly.

MIPS has a successful track record of leveraging university expertise to help Maryland companies innovate and bring technologies to market.

Martek Biosciences, Hughes Network Systems, MedImmune Inc., and Black & Decker—each have products that benefited from MIPS projects with Maryland faculty.

MIPS supported Martek during its early stages, before the company generated over \$500 million in revenue from its patented Omega-3 oils, which appear in nearly every major infant formula product in the U.S.

“When we were developing the organism that made our primary product, we didn't know anything about fermentation, and we didn't have the necessary equipment,” said Henry Linsert Jr., Martek's former chairman and chief executive officer. “Through MIPS, we were

able to work with the university's Bioprocess Scale-Up Facility and develop the early, small-scale fermentation that we later scaled up for making hundreds and millions of dollars of this stuff.”

MIPS-developed technologies have contributed to products generating over \$9.8 billion in revenue, including Hughes' and Martek's products, MedImmune's Synagis, a line of Black & Decker's masonry drill bits, and Navmar Applied Sciences' unmanned aerial vehicles.

Annapolis-based Quantum Sail Design Group, the number two sail maker in the world, uses MIPS-developed technologies in nearly all of its sails.

MIPS has supported 512 different research projects teaming faculty with 345 different Maryland companies since 1987. The program has funded just under half of all proposals submitted.

MIPS' \$26 million in funding over that time period was matched by \$110 million in cash and in-kind contributions from Maryland companies—leveraging the program's resources by a 5.2:1 ratio.

Companies of all sizes from many parts of the state have participated, as have faculty from nearly all of the University System of Maryland's 13 institutions.

MIPS projects are funded twice yearly.

MARTEK
life enriched.™



Products containing Martek's DHA omega-3 fatty acid

Faculty-led research projects to help Maryland companies develop technology-based products

Round 38 MIPS Projects

Projects commencing in August, 2006 are listed below.

University key: UMCP = University of Maryland, College Park; UMB = University of Maryland, Baltimore; UMBC = University of Maryland, Baltimore County; UMBI = University of Maryland Biotechnology Institute; UMCES = University of Maryland Center for Environmental Science; UMES = University of Maryland Eastern Shore.

3CLogic Inc. (Rockville): developing enterprise-level products to monitor and manage the peer-to-peer (P2P) traffic used by Internet telephony and Skype on computer networks.

University PI: Dr. Neil Spring, Assistant Professor, Computer Science, UMCP.

ACAGI Inc. (Frederick): building a portable video camera system with real-time face recognition, as well as live marking and indexing for immediate archival.

University PI: Dr. Rama Chellappa, Professor, UMIACS and Electrical & Computer Engineering, UMCP.

Alba Therapeutics Inc. (Baltimore): examining approaches for enhancing oral, nasal, and pulmonary drug delivery using Alba's tight-junction technology.

University PI: Dr. James Nataro, Professor, Pediatrics, UMB.

Ariavax, Inc. (Gaithersburg): developing a novel vaccine against urinary tract infection, one of the most common bacterial infections in the U.S., affecting nearly one in three women by the age of 24.

University PI: Dr. James Nataro, Professor, Pediatrics, UMB.

AviHome LLC (Hebron): engineering a ventilated floor system, retrofitted to existing poultry houses, that will: control moisture levels in the bedding; reduce ammonia emissions; inhibit bacteria growth, fungus and insects; and prevent nutrient seepage into ground water. More than 88,000 poultry houses operate in the U.S., with 5,430 grower houses in the Delmarva Peninsula alone.

University PI: Dr. Jeannie Harter-Dennis, Associate Professor, Agriculture, UMES.

axonX LLC (Sparks): testing a new, video-based smoke, flame, and motion detection system to provide

early warning for fires and fewer false alarms.

University PI: Dr. James Milke, Associate Professor, Fire Protection Engineering, UMCP.

BioAssessments LLC (Elkton): developing a system to monitor a person's salt sensitivity, which can indicate an increased risk of cardiac problems and stroke.

University PI: Dr. Mandeep Mehra, Professor, Medicine, UMB.

Cardinal Scientific Inc. (Clinton): designing a Web-based interface for manufacturing parts using a water-jet cutting machine.

University PI: Dr. Satyandra K. Gupta, Associate Professor, Mechanical Engineering, UMCP.

Green Eyes LLC (Easton): creating a device to protect moored water quality sensors from the impairment and degradation caused by the growth and activity of living organisms (biofouling).

University PI: Dr. Louis A. Codispoti, Research Professor, UMCES.

InvisiTrack (Annapolis): building a system for the prediction and early detection of landslides. InvisiTrack's wireless sensing technology, which is also applicable to other markets, works through concrete walls, foliage, and dense fog at over 2,000 feet, giving it distinct advantages over GPS and RFID.

University PI: Dr. Tony Farquhar, Associate Professor, Mechanical Engineering, UMBC.

In Vitro Technologies (Baltimore): optimizing methods for isolating and preserving fish liver cells (hepatocytes), which can be used commercially to test the environmental toxicity of industrial compounds such as fertilizers, herbicides, and insecticides.

University PI: Dr. Andrew Kane, Director, Aquatic Pathobiology Center, Epidemiology & Preventive Medicine, UMB.

Lentigen Corporation (Baltimore): creating new models to treat lung-based diseases such as lung cancer, pneumonia, asthma, fibrosis and emphysema using lentiviral vectors, powerful systems for delivering genes into mammalian cells.

University PI: Dr. Ricardo A. Feldman, Associate

Professor, Microbiology and Immunology, UMB.

Neocera Inc. (Beltsville): prototyping techniques for fabricating super-hard, hydrogen-free, diamond-like carbon coatings. The high- wear-resistant, low-friction, corrosion-resistant coatings could be used for engine and machine parts, medical and optical devices, bearings and electronics.

University PI: Dr. R. D. Vispute, Research Scientist, Center for Superconductivity Research, Physics, UMCP.

Nora LLC (Baltimore): developing manufacturing and purification protocols for Nora's patent-pending therapy for recurrent miscarriages and repeated in vitro fertilization failures.

University PI: Dr. Julianne Mullaney, Research Associate, Biochemistry & Molecular Biology, UMB

Pervasive Technology Engineering, LLC (Greenbelt): testing the company's newly launched fiber optic sensor, which measures minute changes in acoustic pressure. The sensors can gauge the structural health of long bridges, tall and historic buildings, oil and gas pipes, and other structures where sensor data has to travel long distances without losing signal integrity and precision.

University PI: Dr. Abhijit Dasgupta, Professor, Mechanical Engineering, UMCP.

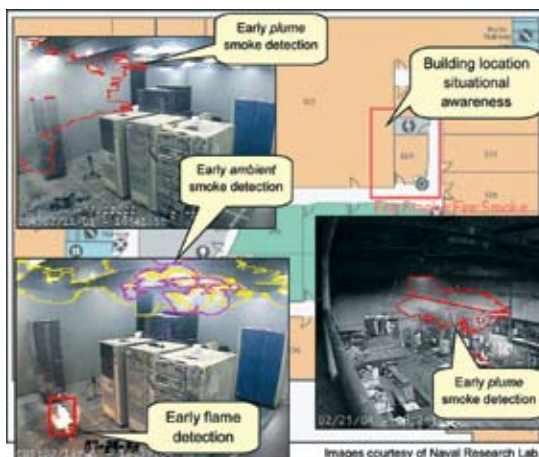
Pharad LLC (Glen Burnie): optimizing Pharad's portable system for detecting concealed weapons on individuals from a distance. The system can be used in a variety of indoor and outdoor environments, including airport concourses and passenger train terminals, public buildings, stadiums, and retail centers.

University PI: Dr. K. J. Ray Liu, Professor, Electrical & Computer Engineering, UMCP.

Prime Circuits Inc. (Potomac): developing fast, three-

dimensional x-ray baggage screening systems to detect explosives.

University PI: Dr. Martin Peckerar, Professor, Electrical & Computer Engineering, UMCP



axonX's video-based smoke, flame, and motion detection system.

Profectus BioSciences

Inc. (Baltimore): support for a clinical study investigating the potential of immunomodulating agents in early HIV therapy.

University PI: Dr. George Lewis, Division Director, Vaccines, UMBI/IHV, UMBI.

Promogen Inc.

(Gaithersburg): optimizing Promogen's technology to produce cancer-targeting gene promoters to treat neuroblastoma and prostate

cancer. Cancer-targeting gene promoters can switch on genes in cancer cells to kill them, while leaving healthy cells alone.

University PI: Dr. Dean Mann, Professor, Pathology, UMB.

Quantum Molecular Pharmaceuticals Inc. (Bethesda):

developing a new radiation sensor that could significantly reduce the size and cost of positron emission tomography (PET) scanners. PET is a nuclear medicine medical imaging technique that produces a three-dimensional image of functional processes in the body.

University PI: Dr. Pamela Abshire, Director, Integrated Biomorphing Information Systems Lab, Department of Electrical and Computer Engineering and Institute for Systems Research, UMCP.

VivaLac Inc. (Brookeville): evaluating the low caloric value and glycemic index role of VivaLac's natural, alternative sweetener, Whey Low®.

University PI: Dr. Thomas W. Castonguay, Professor, Nutrition & Food Science, UMCP.

Faculty-led research projects to help Maryland companies develop technology-based products

Security: It's Still There... You Just Can't See It

UM, Pharad Developing System to Detect Weapons in Open Spaces Through MIPS

By Megan Hartley

Sick of leaving four hours before your flight departs just to stand in a single-file security line?

Pharad LLC is teaming with Clark School researchers in a MIPS project to further develop its weapons detection system, which scans people for weapons in open spaces—such as airport, train, or subway terminals—as they walk by.

“It is analogous to a video camera in the sense that it constantly sees and monitors a scene,” said Pharad President Austin Farnham. “Except its eyes are wide-band, millimeter wave signals.”

The system employs ceiling or wall-mounted sensors that send out radio-wave-like signals to analyze their surroundings. The sensors send data to a computer system, which uses algorithms to detect weapon “fingerprints” on the signals.

When guns, knives—or eventually bombs and explosives—are detected, the system sends an alert and a video feed to security.

Dr. K. J. Ray Liu, professor and associate chair of graduate studies and research in the Department of Electrical and Computer Engineering and Institute for Systems Research, is working with Pharad to develop the algorithm.

“This is a state-of-the-art signal processing algorithm that first detects if a weapon is present, then classifies what kind of weapon it is,” said Liu.



K.J. Ray Liu, professor in the Department of Electrical and Computer Engineering and Institute for Systems Research.

Each weapon has a unique signature defined by a set of electromagnetic resonances that reflect differently depending on its physical makeup. Pharad is testing various weapons to develop a signature library.

“Right now we are still in the development phases; we still have more than a year of development work before it will be on the market,” said Farnham.

While the initial system will detect concealed weapons, Pharad plans to add signatures to find disguised weapons, as well as bombs and explosives.



Screen capture of Pharad's weapon detection software

“We could even detect something like a gun in the shape of a cell phone,” said Dr. Dalma Novak, vice-president of Pharad.

The concealed weapons detection equipment market will be nearly \$10 billion by 2010, according to the Homeland Security Research Corp. The

Department of Homeland Security recently gave the company a \$750,000 Phase Two Small Business Innovation Research Grant. BusinessWeek reports that there are 300,000 to 400,000 travel gateways in the U.S. and Europe alone, a number that could double by 2010.

Pharad hopes to install its system in venues such as train, airport and bus stations, as well as convenience stores and malls.

Founded in 2003, Pharad sells various wireless sensors, communications, and antenna products.

www.pharad.com

Look Out Fire...You're on Camera

axonX, University of Maryland to Validate Advanced Video Fire Detection System

By Megan Hartley

A hidden electrical wire shorts in an art gallery.

Smoke smolders and a fire erupts under the brushstrokes of Monet and Manet. Before the smoke can reach the vaulted ceiling to signal the smoke detectors, countless sensitive, irreplaceable works are destroyed.

This is the fate of many buildings where smoke detectors fail to sense a fire and notify the fire department before significant damage occurs. axonX LLC, a Sparks, Md.-based company, plans to put an end to ravaging fires by teaming with the University of Maryland to validate its intelligent video-camera system, which can spot a small fire in less than five seconds.

axonX's SigniFire™ system can detect fire, smoke and intrusion in structures such as warehouses, energy plants, art galleries and homes. The camera assesses minute pixel changes within its three dimensional field of view-occasionally using reflections to get around large objects blocking the line of sight-to detect fire faster and more accurately than any currently available commercial product.

"It's the only video detection system that recognizes the big three dangers: smoke, fire and intrusion," said George Privalov, chief technology

officer and founder. "It eliminates most nuisance alarms because it actually sees the fireball and corona of a blaze. The camera knows it's a fire rather than a light or hot surface."

The company came to the University of Maryland to work with Jim Milke, associate chair and professor of the department of fire protection engineering, through a Maryland Industrial Partnerships (MIPS) project. This collaboration will help axonX get classified as a life-saving device by Underwriters Laboratories, as

well as by Factory Mutual, an insurance company that tests fire protection equipment.

Milke will prove the camera system's versatility and precise algorithms through tests in simulated dorm rooms, as well as a possible test in Cole Field House, which seats 12,125.

"This is a leading edge technology and a significant advancement in fire detection," said Milke. "They developed the device, and we will help them prove its

capabilities."

The camera's feeds can be sent to any remote location that has installed axonX's SpyderGuard™ software, most likely a security company such as ADT, who--when a fire occurs--will get a notification of the fire as well as a structural plan of the building.

The National Fire Protection Association recently approved video surveillance systems as an effective way to detect fire, marking a significant change to its detector code.

Although axonX has yet to be approved by UL and FM, various customers are already installing SigniFire™'s general eight-camera system, which costs around \$20,000-half as much as some of their competitors. The system is scalable to fit any size and/



axonX's SigniFire™ camera for its video-based smoke, flame, and motion detection system

Faculty-led research projects to help Maryland companies develop technology-based products

or shape of building.

The U.S. Navy tested SigniFire™ with other video image and spot-type detection systems, and found that axonX's technology was far more accurate.

According to the concluding report from the Naval Research Laboratory's Advanced Damage Countermeasures Volume Sensor Project, SigniFire™ responded faster and to more fires than all of the other video or spot-type detection systems.

"We hope the U.S. Navy installs SigniFire™ on its new Destroyers, and Great Britain's Royal Navy is testing our product right now," said Lynch.

axonX is also collaborating with: Cameco, a uranium processing plant; a Family Fun Center in Aberdeen, Md.; the Maryland Golf and Country Club; and Chicago's Children's Hospital.

The company has received funding from Johnson Controls, TEDCO, and angel investors.

AxonX received the Wall Street Journal 2006 Technology Innovation Award for Security (Facilities) in September. The company was selected from among 600 award applications. Winners were judged based on whether the technology truly represents a breakthrough from conventional methods, rather than just an incremental improvement.

The A. James Clark School of Engineering's Department of Fire Protection Engineering is the only accredited undergraduate program, and one of only two graduate programs of its kind in the country. The department celebrated its 50th anniversary in October.

www.axonx.com



Associate Professor and Associate Chair of Fire Protection Engineering Jim Milke

Highlighted Current MIPS Projects

Face Recognition



Frederick-based **ACAGI Inc.** and **Rama Chellappa**, a professor in the Department of Electrical and Computer Engineering and

director of the Center for Automation Research, are building a portable video camera system with real-time face recognition, as well as live marking and indexing for immediate archival.

Explosives Detection

Potomac-based **Prime Circuits Inc.** and **Martin Peckerar**, a professor in the Department of Electrical and Computer Engineering, are developing a fast, advanced, x-ray screening system to detect explosives in baggage and large containers.



Cleaner Poultry Houses



Hebron-based **AviHome LLC** and **Jeannie Harter-Dennis**, associate professor in the Department of Agriculture at the University of Maryland, Eastern Shore, are engineering a ventilated floor system,

retrofitted to existing poultry houses, that will control moisture levels in the bedding, reduce ammonia emissions, inhibit bacteria growth, fungus and insects, and prevent nutrient seepage into ground water. Over 88,000 poultry houses operate in the U.S., with 5,430 grower houses in the Delmarva Peninsula alone.

Joint MTES/State Program Wins National Pollution Prevention Award

MTES and the Maryland Department of the Environment (MDE) received a Most Valuable Pollution Prevention (MVP2) Project/Program Award from the National Pollution Prevention Roundtable in September.

The award recognizes the two entities' joint Environmental Management System (EMS) Implementation Assistance Program, which has assisted 30 Maryland companies in adopting EMS programs.

Criteria for the award included program innovation, measurable results, transferability, commitment, and optimization of available project resources. The National Pollution Prevention Roundtable presented the award as part of National Pollution Prevention Week.

The MDE/MTES program, subsidized by grant funds from the U.S. Environmental Protection Agency, takes groups of 3-5 businesses at a time through EMS implementation, from start to finish, in six months or

less. While such a service costs companies \$15,000 or more through the private sector, the MDE/MTES program is free.

"Maryland's program was a tremendous help for us," said Reggie Prime, director of environmental affairs at Coca Cola Enterprises. "We're now in a position to prepare an EMS template for our other bottling facilities, and we couldn't have done it without this program. I encourage other Maryland businesses to take advantage of this valuable service."

An EMS program offers a systematic approach for organizations to bring environmental considerations into decision-making and day-to-day operations. It also establishes a framework for tracking, evaluating and communicating environmental performance, as well as helping to ensure that major environmental risks and liabilities are identified, minimized and managed.

The MDE/MTES program works with each group of companies through four workshops, meeting with companies on-site 8-12 times, and offering technical assistance ranging from identifying environmental aspects and pollution prevention opportunities to establishing reliable means of monitoring and measurement. At the conclusion, the facility is offered a free, informal EMS audit.

The MDE/MTES program spends an average of 150 hours on site with each participating company.

Many companies completing the MDE/MTES program elect to apply for ISO 14001 certification, a standard that helps organizations minimize how their operations negatively affect the environment and comply with various environmental requirements.

Five companies participating in the program have since won Businesses for the Bay Awards, given to companies in the Chesapeake Bay watershed achieving pollution prevention success.

Paul Gietka, manager of the Environmental Engineering Program at MTES, provides technical assistance



Left to right, with the MVP2 award: MTES' Jim Schaarsmith, MDE's Laura Armstrong, and MTES' Paul Gietka.

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to program companies through pollution prevention assessments, measuring and monitoring, and environmental compliance assistance—all of which help companies improve the quality of their EMS.

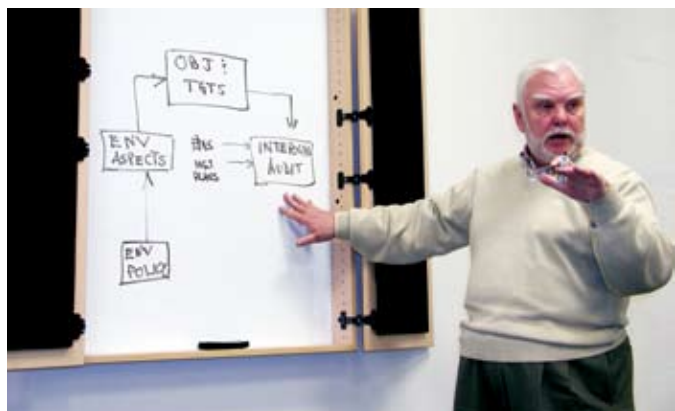
“New groups are always forming for companies of all sizes,” said Gietka. “Interested companies should contact MDE or MTES to reserve a spot in this free, proven program.”

P2's Proactive Approach

EMSs help facilities both strengthen their environmental compliance program and institutionalize the concept of pollution prevention through company policies and procedures. P2 offers a proactive approach to environmental management, where waste is reduced or eliminated at the source—rather than through control and treatment technology. For instance, companies with EMSs must have environmental policy statements that include a commitment to preventing pollution. Companies are also required to identify all environmental impacts, both regulated and non-regulated, and identify projects that address these impacts.

The EMS program involves workshops, on-site meetings and technical assistance. At the conclusion of this six-month program, an audit team is available to help assess the company's EMS. There is no cost to participate in this valuable program.

For more information, contact MTES' environmental program manager, Paul Gietka, at 410-706-3445, or pgietka@umd.edu.



MTES' Jim Schaarsmith leading an environmental management system training.

EMS Program Results

30 Companies, Five Years

30 Maryland companies have met the requirements of the global ISO 14001 standard for environmental management systems through the EMS Program.

Cement manufacturer: undertook a successful water-recycling pilot, potentially saving 17 million gallons per year in water use and discharge, saving \$10,000-12,000/year statewide.

Aerospace company: achieved a 200-ton reduction of solid waste with an associated annual cost savings of \$90,000 per year, and a 600,000 kilowatt per year energy reduction, saving \$50,000 per year. This reduced 1,200 pounds of carbon dioxide and other air emissions from entering the environment.

Bottling company: reduced electric energy consumption by 7.5 percent, reduced water consumption by 7.5 percent, and solid waste by 10 percent.

Automotive supplier: saved \$150 per month on hazardous waste reduction from paint mixing, reduced solid waste by 10 percent and saved \$470 on monthly energy costs.

Aerospace manufacturer: increased electric power use efficiency and eliminated the use of chromates by reformulating its primer coat.

Food manufacturer: achieved a 20 percent reduction in wastewater, 5-10 percent reduction in water use, 25 percent reduction (2,000 lbs) in hazardous waste, 100,000 pounds in solid waste, and a 10 percent reduction in energy usage.

MTES Launches Continuous Innovation Initiative

New Program Brings Innovation Processes to Small, Mid-Sized Manufacturing Companies

Toyota, Google and 3M don't just get lucky with market-shattering products. Instead, each of these companies employs a vigorous business model to stimulate constant innovation.

The University of Maryland aims to bring these types of models to small and mid-sized Maryland manufacturers through a new program announced this summer.

The Continuous Innovation Initiative, part of the A. James Clark School of Engineering's Maryland Technology Extension Service, guides companies in establishing robust, in-house processes to generate perpetual innovation.

"A company's success in today's market hinges on its ability to innovate," said Dr. Herbert Rabin, associate dean of the Clark School and director of the Maryland Technology Enterprise Institute. "Point innovation is not enough. Highly competitive businesses integrate processes for creating ideas—to deliver new products, enter new markets, add value for customers, forge new partnerships, or increase productivity."

Meeting a Need

With nearly 40,000 Maryland manufacturing jobs lost since 2000, according to the National Association of Manufacturers—to international competition, high costs, productivity improvements, and the recent recession—many of the 4,300

manufacturing companies in the state should turn to innovation for a competitive edge, according to Al Etheridge, manager of the Continuous Innovation Initiative.

"If you are competing on cost, there's a good chance you'll lose the battle to overseas manufacturing," said Etheridge. "American companies must innovate to stay ahead."

Nearly 70 percent of companies cite globalization as a major reason for their approach to innovation, according to a Boston Consulting Group poll released in a recent issue of BusinessWeek. The same percentage of companies named innovation as one of their top three priorities for this year.

"Our nation cannot afford to lose its manufacturing



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innovation edge and the wealth that it generates throughout our economy,” said Jerry Jasinowski, president of The Manufacturing Institute, the research and education arm of the National Association of Manufacturers. “We need programs like this to develop human capital, revitalize fundamental research and encourage productivity-enhancing investments in order to maintain a critical mass of production and a viable innovation process in this country,” he concluded.

How the Program Works

CII works with several companies at a time, for 3-6 months, leading them through a four-step model of assessing current innovation practices, aligning resources, executing, and instilling a permanent culture of innovation into their business environments.

“Being in a university, we’re uniquely positioned to spread knowledge about establishing innovation processes,” said Etheridge. “We’re not guarding the secret sauce. We’ll work diligently to share it with every company we can.”

Over the past five years, companies citing commitment to innovation have increased revenues by an average of almost 350 percent, according to a recent survey by PricewaterhouseCoopers.

That same bottom line, Etheridge said, is the focus of CII: results.

www.mtes.org/innovation

“If you are competing on cost, there’s a good chance you’ll lose the battle to overseas manufacturing. American companies must innovate to stay ahead.”

— Al Etheridge, Continuous Innovation Initiative Manager

Continuous Innovation Initiative Pilot



How CII Adds Value

CII guides companies through the following process for establishing their own unique, sustainable innovation processes.

ASSESS

CII works with companies to assess their existing innovation practices and charts a course for enhancing them.

ALIGN

CII leads companies in aligning their resources toward achieving their goals through innovation.

EXECUTE

CII guides companies in creating actionable, measurable steps for applying continuous innovation throughout their businesses.

INSTILL

CII’s success hinges upon instilling a culture of innovation into an organization, enabling it to continuously assess, align and execute to meet the changing demands of business.

Work with CII by calling Dr. Barry Frey, Director of MTES, at 800.245.5810, or e-mail bcfrey@umd.edu.

ISO 9000 Certification Helps USA Fulfillment Instill Quality Throughout its Business

Quality pervades nearly every aspect of USA Fulfillment's business, thanks in part to the MTES' Maryland ISO 9000 Consortia, managed by Gene Ritz.

The Chestertown-based company provides fulfillment services to national clients such as consumer goods manufacturers, cosmetic manufacturers, and other businesses or associations that sell products using USA Fulfillment as a "silent partner." Those services include fulfilling catalog and web-based orders, as well as premiums and rebates. USA Fulfillment's customers include, among others, Estèè Lauder, Affinion Group, American Wellness, Convergence, and National Safe Kids.

With 80 full-time and ten part-time employees, family-owned USA Fulfillment shipped between 4-5 million products for its customers in 2006.

The company completed MTES' 18-month ISO 9001 Consortium program, a series of monthly trainings, events, and on-site consultations designed to help companies prepare for ISO certification. Stan Sanders, USA Fulfillment's Quality Coordinator, led the effort for the company. Sanders also manages both security and disaster recovery functions for the company.

ISO 9000 is a family of standards created by the 91-nation International Organization of Standardization (ISO), which establishes requirements for quality management systems. Companies conforming to these standards qualify for ISO 9000 certification. Being ISO 9000 certified means a company follows a well-defined, process-based management system to ensure the delivery of quality products and services to its customers.

MTES' ISO Consortium program provided USA Fulfillment with documentation templates for the

company's quality manual. Ritz also assisted USA Fulfillment with on-site support for documentation reviews, internal auditing training, and ISO requirements interpretation.

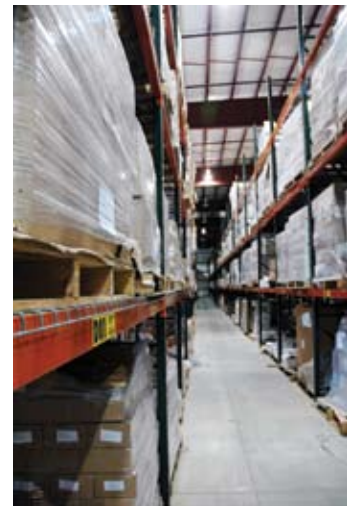
However, Sanders and the entire USA Fulfillment organization did the real work, according to Ritz. "Helping USA Fulfillment reach their goal of ISO certification was a rewarding experience for me personally. I can't say enough about the leadership of Sanders and his enthusiasm and commitment to the ISO effort."

"He helped us understand what the big scope was for working on our quality management system and getting that into a quality manual," said Sanders. "He helped us refine things that are more obscure. With his background, he helped us understand what was behind the standard and what we were trying to achieve through it."

USA Fulfillment leveraged its quality management system to advance in many areas.

"There are internal and external components," said Sanders. The obvious external component is that because ISO 9000 is recognized worldwide, it's a selling point with clients. Since we're an outsourcing agent, they can maintain their own quality standards because they're hiring a partner that is qualified and focused on quality. They don't have to audit us because it's already built into our own certification. It's a big benefit to those companies.

"Internally, it gives us discipline in following up so that when we make a mistake, we can correct not only the mistake, but also address its root causes. One of the watchwords we have is that we want mistakes never to happen again. But we didn't have a



USA Fulfillment's warehouse

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formal framework to do that until we adopted the ISO 9000 standards—things such as regularly scheduled management reviews and internal auditing. Now, when we do research on issues that come up, we have preventive or corrective action plans in place. There’s a process to follow, plus a review process as part of our own internal auditing.”

On December 8, 2005, QMI, North America’s leading management systems registrar, recommended USA Fulfillment to be registered for the ISO 9001:2000 standard for quality.

“Every department in the company made this prestigious accomplishment possible,” said Sanders. “Company president and CEO Shirley Moore has long had a dream that we would move into our new home [a facility the company moved to in August, 2006] with an ISO 9000 banner flying proudly over the building.”

USA Fulfillment’s Quality Management System was officially certified to ISO 9001:2000 in January, 2006.

“ISO 9000 is the world’s most popular and widely used standard for quality,” said Sanders. “The certification covers all of our business functions and reflects our deep commitment to quality.”

One of the many positive aspects of USA Fulfillment’s Quality Management System listed in QMI’s Certification Audit Report was “Efforts at continual improvement of services and facilities is noteworthy.”

“Our challenge now is to build on our quality foundation by making many more improvements in the future,” said Sanders.

USA Fulfillment’s quality system policy is to:

- Deliver fulfillment services that exceed the expectations of its clients
- Provide the right products to the right customers at the right time
- Produce a positive and profitable fulfillment experience for all parties by working together
- Manage business functions as processes and continually improve our Quality Management System

In a 2005 report, USA Fulfillment cited a \$100,000 increase in sales and \$150,000 in retained sales, in part thanks to acquiring ISO certification. The company also cited a \$230,000 increase in investment.

The bottom line of ISO 9000 certification is meeting your customers’ needs and managing your own business more effectively, according to Ritz.

“Many companies have no formal management system at all,” said Ritz. “ISO requires you to have a system to monitor and measure your organization’s effectiveness and performance and find ways to improve. You even have to show improvement to maintain your ISO certification—so you’re continually improving to serve your customers and grow your business.”

www.usafill.com



USA Fulfillment President and CEO Shirley Moore



USA Fulfillment warehouse, upper-left corner, and new facility in Chestertown

SuperArray Offers New Gene Testing Format With MTES' Assistance

Company, MTES Co-Design New Product

By Megan Hartley

Frederick-based SuperArray Bioscience Corporation, which develops and manufactures gene expression microarrays for biomedical research, wanted to make gene testing easier and more efficient for customers using its microarrays.

Previously, government, university laboratory, and pharmaceutical customers were limited to a single array processing tube that required many tedious steps.

SuperArray contacted the Maryland Technology Extension Service (MTES)—which previously helped the company expand its manufacturing facility and double in size—for assistance.

MTES' Gene Taylor worked with SuperArray Vice President Dr. Sean Yu, Senior Scientist Ray Blanchard, and Dan Alper of Strauss Co., to create the GEArray Express Hybplate—a compartment-sealed chamber enabling eight, simple, speedy, simultaneous array tests.

"We took it as a challenge," said Taylor. "When you first look at it you think 'well that's simple,' but when you get into it and see all the variables it's anything but simple."

Taylor and Alper worked with company scientists on the design of the Hybplate and plate seal, attempting to create a product solution that was technologically sound, easy to use and relatively cheap. Yu and Blanchard helped with the biological aspects of the prototypes, providing knowledge as to how reagents and solutions would react with different materials.



SuperArray's facility in Frederick

After a period of 2-3 months and the evaluation of various prototypes, the team settled on an eight-compartment, foil-sealed chamber.

One of the most important parts of the new device is the user-friendly seal. It has three layers—backing, adhesive and foil—that consolidate into one material. It is effortlessly peeled from the backing paper and placed on a rectangular box with eight different sections. The adhesive molds around the outer edge of each section preventing reactions from contaminating one another.

Different reagents and solutions can be added through pipette penetration of the foil, a process considerably easier than the opening/closing a screw cap required by the older tubes.

The seals developed by Taylor weren't just effective, but they were also cost-efficient—requiring less than one dollar per unit—not including the cost of tooling. "We came up with some great ideas but if you're going to pay five dollars a piece for it, it just doesn't make sense," said Taylor.

Customers can purchase a chamber specific to their area of study for \$60 to \$300 per array. The HybPlate's are equipped for gene testing in humans,



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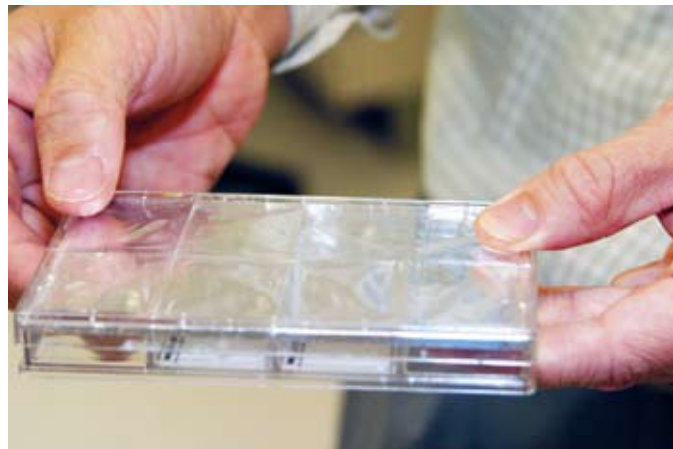
mice or rats and studying ailments ranging from cancer to heart disease.

Customers could purchase a Hybplate with eight coordinating arrays for between \$480 to \$2,400 dollars, giving them convenience for less cost, and higher revenue for SuperArray.

SuperArray sells its products to customers in 20 different countries ranging from Australia to Europe to Asia.

“We are the only company who offers an extensive list of different applications,” said Dr. Yu. “We will gradually sell all our products in the [compartment] Hybplates.”

www.superarray.com



Eight-compartment, foil-sealed chamber for gene expression microarrays designed by MTES for SuperArray.

MTES SuperArray Project Results

- ✓ **\$200,000** in increased sales annually
- ✓ **\$200,000** in retained sales annually
- ✓ **\$20,000** in labor cost savings annually
- ✓ **\$3,000** increased equipment investment
- ✓ Retention of one full-time employee



Chamber being placed into a ThermoShaker, which can process up to 32 arrays in one day.



ThermoShaker with chamber installed.

2006 MTES ISO 9000 Consortia Members

The Maryland ISO Consortium program helps Maryland companies improve their internal operations; establish, maintain, and/or expand their supplier status with U.S. companies and federal agencies; and improve their competitiveness in domestic and international markets. Each Consortium, typically lasting 12-14 months, includes comprehensive training events covering all aspects of implementing an ISO 9000-conforming system into an organization. Companies participating in ISO 9000 Consortium training in 2006 include:

- American Nurses Credentialing Center
- Applied Quality Communications
- Ascellon Corporation
- Camtec
- COLA
- Crown Consulting
- Data Solutions & Technology
- Delta Engineering
- Digna Machines
- Diversified International Sciences
- Eagle Systems
- Energy Enterprise Solutions
- Environmental Eng & Construction
- ERT, Inc.
- Exceed Corporation
- JEM Engineering
- Johns Hopkins Applied Physics Laboratory
- Jony Solutions

- Livanta
- M.S. Willett
- Millennium Engineering and Integration
- Netco Government Services
- Plexus Com Group
- Reactive Nano Technologies
- Strategic Applications & Technologies Inc.
- Tri Tech Enterprise Systems
- Wood Consulting
- Vision Systems & Technology

2006 MTES ISO 14001 Consortia Members

MTES, in conjunction with the Maryland Department of the Environment (MDE) through a U.S. Environmental Protection Agency grant, assisted the following companies in implementing environmental management systems based on the ISO 14001 global standard. Businesses participate in groups of four or five. Environmental management systems (EMSs) help organizations systematically identify, measure, and manage their regulated as well as unregulated environmental impacts.

- Lorch Microwave
- Standard Register
- L3 BAI Aero-Systems
- Washington Metropolitan Transportation Authority
- Freedom Electronics Recycling
- General Dynamics Robotics Systems
- Coca Cola - Baltimore

MTES Six-Year Impact: \$115.6 Million

The following table shows MTES' six-year economic impact on Maryland manufacturers. The data is based upon surveys of MTES clients from January 2000 through June 2006 by the National Institute of Standards and Technology Manufacturing Extension Partnership.

MTES ASSISTED MANUFACTURES IN:	
Increasing sales by	\$20.2 million
Retaining sales of	\$60.1 million
Saving in costs	\$6.8 million
Saving on investments made by	\$7.3 million
Avoiding unnecessary investments of	\$9.1 million
Increasing investments, plants or equipment by	\$12.1 million
Creating or retaining jobs	816 employees

Knowledge-based engineering, technical and management solutions for manufacturers

2006 MTES Clients (107 Total)

- 311 Garage
- AAI Corp.
- AdvantEdge
- AGNIK, LLC
- Air Products & Chemicals
- Alcore, Inc.
- ARCON Welding, LLC
- ATK Elkton, LLC
- Atlantic Coatings
- AviHome LLC
- BAI Aerosystems, Inc.
- Baltimore Shipping Technologies, LLC
- Bel-Art Products, Inc.
- Blue Square Energy
- BSCO Incorporated
- Cambrex Bio Science Walkersville, Inc .
- Cardinal Scientific, Inc.
- Cecil County Department of Health
- Cecil County Planning & Zoning
- Central Precision, Inc.
- Chesapeake Finished Metals
- Chicago Metallic Corporation
- CI Technologies
- Closet Factory
- Coca Cola Enterprises, Baltimore Plant
- Colonial Metals
- Crab Place
- CreaFill Fibers Corp.
- Custom Direct, LLC
- DataStream Content Solutions
- Dees Fluid Power
- Delectable Desserts
- Denkmeier Optical, Inc.
- EAI Corporation
- Eastern Plating
- Exceed Corporation
- Falcon Systems Engineering Corp.
- Filtronic Comtek, Inc.
- Freedom Electronics Recycling, Inc.
- Gamse Lithographing Company, Inc.
- General Dynamics Robotics Systems
- Good Humor-Breyer's Ice Cream, Inc./Unilever Foods North America
- Gorton Merrick, Inc.
- Green Eyes, LLC
- Grizzly Services, LLC
- H.R. Nicholson
- Hanover Foods Corporation
- Happy Hoppers
- Heidtman Steel Products, Inc
- Icey-Tek USA
- Ilex Woodworking
- JEM Engineering
- K & L Microwave, Inc.
- K. Neal International Trucks, Inc
- Kopflex
- L. Gordon Packaging
- LaMotte Co., Inc.
- LenderKing
- Life Science Products, Inc.
- Locke Insulator
- Lorch Microwave
- M.S. Willett, Inc.
- MarquipWardUnited
- Maryland Chemical Company
- Maryland Thermoform
- Medifast
- Medimmune, Frederick
- Midasco, Inc.
- Millennium Engineering and Integration
- Next Day Blinds
- NovaTech, LLC
- Optelecom, NKF
- Orion Safety Products
- Rampf Molds Industries, Inc.
- Reactive NanoTechnologies, Inc.
- REICO Kitchens & Bath
- Rockland Machine, LLC
- ROI Technologies
- Rubberset Company
- Saft America, Inc.
- Schoenbauer Furniture Stripping
- Schroeder Industries, LLC
- SEMicro
- Shasta Beverage
- SolidTops, LLC
- Space, Ltd.
- Standard Register Co.
- Stone Industrial
- Stress Indicators, Inc.
- Structural Systems, Inc.
- STX, Inc.
- SuperArray Bioscience Corporation
- Tanglewood Conservatories, Ltd.
- Technigraphics of Maryland, Inc.
- Teledyne Brown Engineering Energy Systems
- TruGamerz, LLC
- TRX Systems, Inc.
- Tulkoff Food Products, Inc.
- U.S. Bullet Proofing
- Universal Forest Products
- Victor Graphics
- Victory Racing Plate Co.
- Warner Air, LLC
- Washington Metro Area Transit Authority
- Will Standiford
- William T. Burnett & Company
- YAS Photonics



BSF Supports BioFactura in Developing Smallpox Therapeutic

By Megan Hartley

BioFactura Inc. is developing a therapy for smallpox using the University of Maryland's Bioprocess Scale-Up Facility (BSF).

The Rockville-based company is collaborating with Fort Detrick in the laboratories of the U.S. Army Medical Research Institute of Infectious Diseases, in hopes of commercializing a product within four years. BioFactura will use the BSF to find the best way to manufacture the drug at a large scale.

"The BSF has state-of-the-art equipment," said BioFactura's president and CEO Darryl Sampey. "The value for price is unsurpassed, which is critically important for a small company with limited funds."

Smallpox, characterized by a rash of lesions, killed an estimated 300 million people in the twentieth century alone before it was declared globally eradicated in 1980. The government has labeled the disease a "Category A" agent—presenting the "greatest potential threat for harming public health," according to the Centers for Disease Control and Prevention.

The virus, transmitted by contact or through the air, can survive in dust, bedding and clothing, even traveling through air ducts. "Although anthrax proved to be a deadly bioterror agent, a smallpox attack could be devastating," said Sampey.

Since routine vaccinations for children were discontinued in 1972 and studies have shown the

"The BSF has state-of-the-art equipment," said BioFactura's president and CEO Darryl Sampey. "The value for price is unsurpassed, which is critically important for a small company with limited funds."

—Darryl Sampey, President and CEO, BioFactura

vaccine is less effective after five years, the American population is highly vulnerable to the virus. The threat of this agent in the hands of terrorists has caused the government to pour funds into developing new, safer vaccines. An effective therapy would be of greater benefit.

BioFactura was awarded \$730,000 in Phase II funding in July from the U.S. Department of Defense through its SBIR program, to support pre-clinical efficacy studies of BioFactura's smallpox therapeutic.

The challenge studies will demonstrate prophylactic and therapeutic effectiveness of this biodefense countermeasure and will lead to Phase I clinical safety trials. The pre-clinical studies will be performed at the biocontainment laboratories at Ft. Detrick, Md., in collaboration with a team of scientists from the U.S. Army Medical Research Institute of Infectious Disease (USAMRIID).

"This significant follow-on award highlights the U.S. Government support of BioFactura's smallpox biodefense program. The funding will allow BioFactura to make a major step towards its goal to provide a smallpox therapeutic for both military and civilian defense," said Sampey.

www.biofactura.com

Bioprocess scale-up and research, downstream processing, courses and workforce training

2006 Industrial and Academic Research Projects

- Advanced BioNutrition
- Advance Bioscience Labs
- Department of Animal Sciences
- AFG Biosolutions
- BioFactura
- Boston Life Sciences
- Department of Enteric Infections, Walter Reed Army Institute of Research
- Ghandehari, Hamid, Center for Nanomedicine, Department of Pharmaceutical Sciences, UMB
- Hutcheson, Steve, Dept. of Cell Biology and Molecular Genetics
- IntelliTECH
- Lo, Martin, Dept. of Nutrition and Food Science
- Meng, Jianghong, Dept. of Nutrition and Food Science
- NIH
- Nova Biomedical
- Omnia Biologics
- Paragon Bioservices
- Protein Polymer/NIH
- Protein Therapeutics
- Tsai, W., NAIMS, NIH
- Vakharia, Vikram N., Center for Advanced Research in Biotechnology

2006 BSF Tours

- Annapolis Men's Club
- CIA University
- Community College of Baltimore County
- Discovering Engineering at the University of Maryland, Clark School of Engineering
- Exploring Engineering at the University of Maryland, Women in Engineering
- ESTEEM Research Mentoring Program, Center for Minorities in Science and Engineering
- Minkon Biotechnology
- Prince George's Co. DBED
- SAIC
- Stepping Stones to Your Future Program, Women in Engineering
- Summer Bridge Program, Center for Minorities in Science and Engineering
- Summer Engineering Outreach Students
- Young Women in Engineering Tour
- Washington Security Group: Provided a three day, hands-on site inspection training for DoD biochemical inspectors. The BSF simulated a real inspection scenario.

Downstream Processing, Protein Purification and Fermentation Workshop photos



Workforce Training/Workshops

- Downstream Processing, Protein Purification and Fermentation: Five day workshop, including a two-day fermentation workshop followed by a three-day downstream workshop.
- MedImmune personnel training; 130 of MedImmune's employees have completed the BREP training program.
- "Special Topics in Bioengineering—undergraduate class where students work through a production campaign, from expression system to vialled protein product, providing a valuable for students interested in the growing field of biopharmaceutical production.

Bioprocess scale-up and research, downstream processing, courses and workforce training

Feature BSF Client: Zymetis, Inc.

Company's Technology May Hold Key to Economically Efficient Ethanol Production

Zymetis Inc., a company whose technology may make inexpensive ethanol production a reality, is scaling up its product through the Bioprocess Scale-Up Facility.

Founded by Steve Hutcheson, a professor in the Department of Cell Biology and Molecular Genetics, Zymetis is developing enzymes and enzyme products that break down plant material into its constituent sugars—which, in turn, can easily be converted into fuel-grade ethanol.

“The BSF is helping us establish initial growth parameters for our bacterium, as well as optimize the production of our enzymes,” said Hutcheson.

The BSF specializes in preparing bench-top or lab-produced biologicals for mass production.

A biological product's commercial potential can hinge—both technically and economically—on the ability to accurately and efficiently manufacture it at large scale.

“Our goal is to prepare Zymetis for a smooth transition to a large-scale production facility,” said Ben Woodard, director of the BSF. “This, like many of our projects, requires alterations or modifications that prove principle and concept while increasing product yields and efficiencies. Expenses for entering production can exceed \$100,000 per day, so it is critical for us to optimize Zymetis's processes while the company is still here.”

If Zymetis is successful, it could revolutionize the fuel industry with a compelling alternative to corn ethanol.

The company's initial product, Ethazyme™, is a proprietary mixture of enzymes that breaks cellulose and other cell polymers found in plants into glucose



Bioprocess Scale-Up Facility Director Ben Woodard, left, and Dr. Steve Hutcheson, founder of Zymetis and professor in the Department of Cell Biology and Molecular Genetics.

and other fermentable sugars.

Zymetis is targeting the “biomass” market as a potential source for ethanol. Biomass broadly encompasses the vast supply of plant material found in grasses, forestry products, and agricultural waste products such as corn stover.

Sugar fermented from biomass sources is known as BioEthanol. BioEthanol is highly desirable not only because of its energy content, but also because it is considered the only carbon-neutral form of transportation fuel on the horizon.

Zymetis projects that top sources of biomass could yield enough BioEthanol to meet 100 percent of current U.S. fuel needs.

The company's unique intellectual property was developed at the University of Maryland through the efforts of Hutcheson and Ron Weiner, professor emeritus in the College of Life Sciences, and is licensed exclusively to Zymetis.

Zymetis recently joined MTECH's VentureAccelerator Program, which is working with Hutcheson to define business processes that will guide the company towards successful commercialization.

www.zymetis.com

Accelerating technology entrepreneurship and leveraging university resources for companies

Life-Saving Technology Company Joins MTECH's Technology Ventures Building

By Megan Hartley

A company with the technology to save 1/4 million lives a year is the first to join the Maryland Technology Ventures Building (TVB), part of M Square, the university's research park for science and technology companies.

MXF Technologies, which moved into the building in January, has developed a multi-energy X-ray that improves contrast significantly. The core technology is an inexpensive filter that can be applied to current X-ray machines and penetrates the different tissues in a woman's breast simultaneously with lower radiation.

"This is a next-generation medical technology," said Dr. Yong Cho, chief executive officer of MXF Technologies. "Today's technology can be compared to a flashlight, now we are using a lighthouse."

The name of the company stems from the single-wavelength Monochromatic x-rays produced by the filter, like an x-ray laser. This strong yet less harmful x-ray is ideal for the dense tissue of younger women, and the energy level can be selected to match breast density.

"The filter is similar to a crystal that's exposed to white light, it separates out the different colors, just like the energy levels in the X-ray. These KeV levels have different tissue specificities," said Michael Champ, executive vice president.

Current mammograms work only 40-50 percent of the time because they are unable to penetrate the dense breast tissue of women with lean breasts, including most women under 50. In 2003 the American Cancer Society lowered its age recommendation to 40 for women to begin annual mammograms.

"Breast cancer in young women is more aggressive, because the cells divide faster," said Rose Bechtel, Chair of the Breast Cancer Action Nova

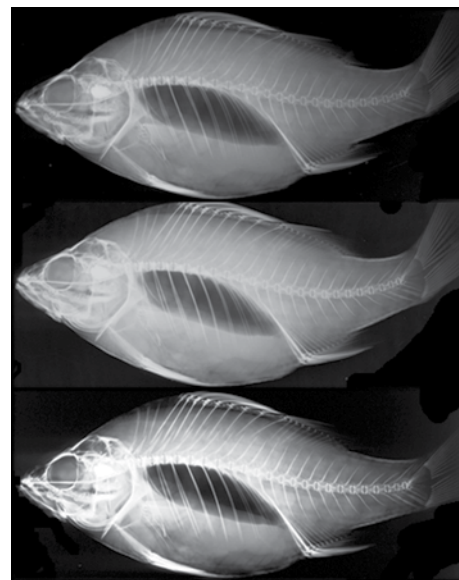
Scotia. "The older you are the better your chances of surviving."

However, breast cancer is not the only application for the monochromatic x-ray. Eventually, it could replace all polychromatic x-rays, becoming the new industry standard. The University of Virginia Medical School and the Mayo Clinic are already using MXF's technology for medical research. MXF is currently designing and producing high X-ray energy level MXF Filters to produce spectral signatures of materials for the detection and identification of liquid and solid explosives at entry check points in hand carryon, bags, backpacks, luggage, etc.

The TVB managed by the Maryland Technology Enterprise Institute, is the first commercial space to emerge in M Square. The 49,480-square foot office building, with two class-1,000 clean rooms, offers a key location for MXF Technologies.

MXF is in discussion with Seoul National University Medical School to conduct pre-clinical trials for using multi-spectral X-ray imaging in medical applications. MXF also has OEM Demonstration Projects with: Imaging Science International in Pennsylvania (Orthodontal/Head CT); Bone Density in Massachusetts (Hologic, Inc.); NDT (QA/QC) for Electric Circuits in Korea (LG Electronics); and Multi-spectral Detectors (Hamamatsu) in New Jersey.

www.mxftech.com



Pictured, top, a normal X-ray. The second two show variations of how MXF tunes monochromatic X-ray output to different energy levels (keV) to optimize X-ray images for tissue specificity to produce the best image—the fish closest to the bottom.

Nine Organizations Apply for 2006 Maryland Performance Excellence Awards

Nine Maryland organizations have applied for the 2006 Maryland Performance Excellence Awards, which are given each year to honor quality, productivity and business achievements as measured through the National Institute of Standards and Technology's Baldrige Criteria for Performance Excellence.

Applicants are judged by 66 volunteer examiners, who donate as many as 100 hours of time to assess each potential winner based upon the Baldrige Criteria.

Nine team mentors are also volunteering their time to judge the nine groups of examiners assigned to each applicant, as are nine examiner trainers and 35 new examiner mentors.

Winners will be announced at this year's MPEA Conference and Awards Ceremony, to be held on March 12, 2007, in the Stamp Student Union at the University of Maryland. The conference will include:

- Morning Presentations by Baldrige National Quality Award Recipients
- Luncheon with U.S. Senators, University of Maryland President, and State leaders
- Presentation of the 2006 MPEA Awards, including the U.S. Senate Productivity Award and Maryland Quality Awards
- Afternoon breakout sessions with Baldrige Award Recipients

Last year's award winners were: Delmarva Foundation for Medical Care (U.S. Senate Productivity Award); Reeders Memorial Home (Silver Maryland Quality Award); Queen Anne's County Public Schools (Bronze Maryland Quality Award), and Lorch Microwave (Certificate of Recognition).



2006 ASPIRE Projects

The ASPIRE Program, short for “A Scholars Program for Industry-Oriented Research in Engineering,” awarded the following research projects during 2006. Each project teamed undergraduate students with faculty for research relevant to industry. Students received a stipend, which was jointly funded by both MTECH and sponsoring faculty members.

Spring 2006

- *Reversed Wormlike Micelles as Particle Dispersion Container*; Yi-En Huang (student); Srinivasa Raghavan (faculty).
- *Light Induced Changes in Rheological Properties of Self-Assembled Systems*; Patrick Elder (student); Srinivasa Raghavan (faculty).
- *Small Scale Potential of Biological Water Reclamation*; Ben Margolis (student); Patrick Kangas (faculty).
- *Algorithms for Data Compression and Secret Key Design*; Arnab Choudhry (student); Prakash Narayan (faculty).
- *Chitosan Microcapsules for Drug Delivery*; Robert Joseph Bender (student); Srinivasa Raghavan (faculty).
- *Robotic Design*; William Lee (student); Gilmer Blankenship (faculty).
- *Osteoprogenitor Cell Attachment to a Novel Material for Palate Reconstruction*; Dafna Kesselman (student); John Fisher (faculty).
- *Development of Degradable Polymers for Hernia Repair*; Eve Rubenstein (student); John Fisher (faculty).
- *Improvement of Suspension System of An Ambulance Stretcher*; Jessica Spires (student); Yang Tao (faculty).
- *Synthesis of Stimuli Responsive Hydrogels*; Alexander Nowodazkij (student); Srinivasa Raghavan (faculty).
- *Potable Water Filtration System for Rural Areas*; Neftalem Negussi, Oluwafunke Adeyemo, Supreet Rekhi, and B. Yohannes-Kassahun (students); Adel Shirmohammadi (faculty).
- *BioFridge: Self-Sanitizing Portable Hybrid Refrigerator*; Sarah Ahmed, Clive Butler, Joseph Dietrich, Tay Hua, Roshan Karunamuni (students); Hubert Montas (faculty).
- *Personal Flotation Device that Delays Onset of Hypothermia*; Suzanne Frentz, David Hwang, Kristin Kirk, Darren Liang, Eve Rubenstein (students); Adel Shirmohammadi (faculty).

Summer 2006

- *Flow and Fire Retardance Properties of Polymer Nanocomposites*; Gary Cheng (student); Srinivasa

- Raghavan (faculty).
- *Molecularly Imprinted Polymers for Recognition of Biologically Active Substances*; Matthew J. Getz (student); Peter Kofinas (faculty).
- *Aerosolization Studies of Vesicles with Applications to Vaccine Delivery*; Andrea Gray (student); Sheryl Ehrman (faculty).
- *Experimental and Modeling Studies of Oxide Nanoparticles*; Sicong Hou (student); Sheryl Ehrman (faculty).
- *Increasing the Miscibility of EHD with PEGDA Using Lecithin, L-a-Phosphatidylcholine, as a Surfactant*; Parth Modi (student); John Fisher (faculty).
- *Characterization of Stimuli Responsive Hydrogels*; Alexander Nowodazkij (student); Srinivasa Raghavan (faculty).
- *Characterization of Molecularly Imprinted Polymers (MIPs) for BioMEMS Applications*; Imran Shamim (student); Reza Ghodssi (faculty).
- *Development of Optic Sensor-Based Force Measurement System to Study Kinetics of Human Movements in MEG and fMRI*; Seong-Jin Seonwoo (student); Jae Kun Shim (faculty).

Fall 2006

- *Absorption of Charged Species by Nanocomposite Hydrogels*; Alexander Salimian (student); Srinivasa Raghavan (faculty).
- *Virus Traps—Engineering substrates with Polymer Films*; Timon Wanga (student); Helim Aranda-Espinoza (faculty).
- *Neutron Flux Measurement Using Gold Foils*; Michael Figueroa (student); Mohammad Al-Sheikly (faculty).
- *Molecularly Imprinted Polymers For Recognition of Biologically Active Substances*; Matthew J. Getz (student); Peter Kofinas (faculty).
- *Block Copolymer Nanoarchitectures for Radio Frequency Applications*; Samuel J. Lopez (student); Dr. Peter Kofinas (faculty).
- *Metal-Doped Block Copolymer Films for Electromagnetic Applications*; Joshua Silverstein (student); Peter Kofinas (faculty).
- *Reverse Aggregates Induced by Multivalent Ions*; Yi-En Huang (student); Srinivasa Raghavan (faculty).
- *Optical Measurements for Sensing and Communications*; Dmitriy Fotiyev (student); Christopher C. Davis (faculty).
- *Hybrid Microcapsules For Targeted Drug Delivery*; Gabrielle C. Galvez (student); Srinivasa Raghavan (faculty).
- *The Self-Assembly of Certain Diacetylene Surfactants Into Helical Tubules*; Adeeb Raziuddin (student); Srinivasa Raghavan (faculty).
- *Light-Induced Changes in Rheological Properties of Self-Assembled Systems*; Patrick Elder (student); Srinivasa Raghavan (faculty).
- *Relationship Between the Flow and Fire-Retardant Properties of Polymer-Clay Nanocomposites*; Gary Cheng (student); Srinivasa Raghavan (faculty).



The Maryland Technology Enterprise Institute (MTECH), a unit of the A. James Clark School of Engineering at the University of Maryland, accelerates technology entrepreneurship and leverages university resources to benefit Maryland companies through its two units: MTECH Ventures and MTECH Partnerships.

Director: Dr. Herbert Rabin | Executive Director: Dr. David Barbe | 301.405.3906 | www.mtech.umd.edu

MTECH Ventures (www.ventures.umd.edu)

MTECH Ventures provides entrepreneurship education to technology creators and delivers a portfolio of services and resources to entrepreneurs committed to bridging the gap between technical ideas and viable ventures.

Venture Creation

- **Technology Advancement Program (TAP):** Leading venture incubator for early stage technology companies. www.tap.umd.edu
- **VentureAccelerator Program:** Intense, hands-on assistance to guide faculty and students in launching new technology ventures. www.va.umd.edu

Entrepreneurship Education

- **Hinman CEOs Program:** Award-winning, living-learning entrepreneurship program for undergraduates. www.hinmanceos.umd.edu
- **University of Maryland \$50K Business Plan Competition:** Mentoring and prizes for faculty, students, and recent alumni. www.bpc.umd.edu
- **University of Maryland Technology Start-Up Boot Camp:** Comprehensive, one-day workshop about launching technology-based ventures. www.bootcamp.umd.edu
- **MTECH Venture Forum:** Dynamic, interactive symposium series for entrepreneurial-minded students and faculty. www.ventureforum.umd.edu
- **Hillman Entrepreneurs Program:** Entrepreneurship program for transfer students beginning study at Prince George's Community College and completing their bachelor's degree at the University of Maryland. www.hillman.umd.edu
- **Entrepreneurship Courses**

MTECH Partnerships (www.partners.umd.edu)

MTECH Partnerships leverages university resources to drive growth in companies committed to advancing technology in Maryland. These resources include R&D funding, manufacturing solutions, contract bio-processing, and performance excellence awards.

Maryland Industrial Partnerships (MIPS): Accelerates the technology economy in Maryland by jointly funding collaborative R&D projects between companies and University System of Maryland faculty to develop commercial products. www.mips.umd.edu

Bioprocessing Research and Education Program: Provides biotechnology companies and professionals with low-cost bioprocess scale-up and research, as well as downstream processing, courses and workforce training. www.bio.umd.edu

Maryland Technology Extension Service (MTES): Enhances the competitiveness of Maryland manufacturers by providing solutions and best practices, as well as optimization, implementation, and innovation assistance. www.mtes.org

A Scholars Program for Industry-Oriented Research in Engineering (ASPIRE): Co-funds research teaming faculty with undergraduate students for projects with potential commercial applications. www.aspire.umd.edu

Maryland Performance Excellence Awards: Measures and recognizes quality, productivity and performance excellence in organizations by presenting the U.S. Senate Productivity Award and Maryland Quality Awards. www.mpea.umd.edu



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