ConsortiumConnection

FEATURE ARTICLES

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High Tech Consortium Joins iDEA Hub

The China Lake High Tech Consortium (CLHTC) has joined the California Innovation Hub for Defense, Energy and Aerospace (iDEA Hub).

In an effort to harness and enhance California's innovative spirit, the state of California launched its forward-thinking Innovation Hub (iHub) program under AB (205). The iHub program improves the state's national and global competitiveness by stimulating partnerships, economic development, and job creation around specific research clusters through state-designated iHubs. The iHubs leverage assets such as research parks, technology incubators, universities, and federal laboratories to provide an innovation platform for startup companies, economic development organizations, business groups, and venture capitalists.

For a small emerging technology company, University research team, or established high-tech business the region encompassed by California's Kern, Ventura , Los Angeles, San Diego and Orange Counties provides an ideal backdrop to incubate and grow Defense, Energy and Aerospace technology and business. Headquartered in Ridgecrest the iDEA Hub has the Naval Air Warfare Center, NASA Armstrong Flight Research Center and Edwards Air Force Base as featured local Federal participants.

To learn more go to: www.ideaihub.org

idea
CALIFORNIA'S INNOVATION HUB FOR DEFENSE, ENERGY & AEROSPACE

California iDEA Hub provides unique access to a robust ecosystem addressing many of our Nation's most critical science and technology needs through:

- Performing nationwide promotion of the region's innovation ecosystem
- Facilitating partnerships between Government, Industry and Academia
- Providing business incubation services and facilities for entrepreneurs and start-up companies
- Connecting private sector capital with technology commercialization opportunities
- Pursuing funded research opportunities to strengthen the regional technology base
- Hosting training and networking events to act as catalysts for idea exchange, collaboration, and knowledge sharing across Defense, Energy and Aerospace industries

Youth Science Institute

Bringing a STEM Focus to Our Communities for Over Sixty Years

The mission of the Youth Science Institute (YSI) is to "Inspire Enthusiasm for Science and a Love of Learning" in Pre-K through 8th-grade students. We teach inquiry-based, life, physical, earth, and social science to more than 32,000 children per year.

Since our founding in Santa Clara County, CA in 1953, we have taught hundreds of thousands of children. We offer two youth science education programs: School & Group Programs and Summer Science Camps. We are committed to ensuring these programs are available to low-income, academically at-risk, and underserved populations. We also offer weekend and evening programs for the whole family.

The majority of the children we teach come to us through our School & Group Programs – we are a much anticipated field trip destination for 31,000 students per year. If teachers cannot bring their classrooms to us, we bring our programs to them.

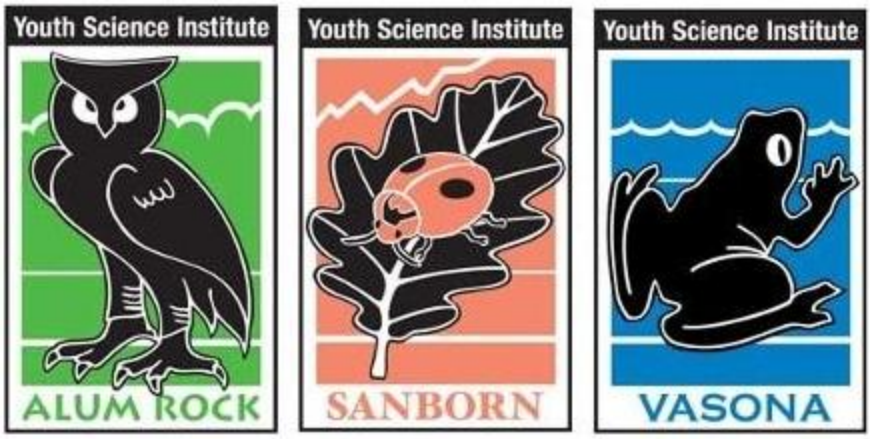
YSI maintains 3 Science & Nature Centers where we deliver our inquiry-based, science education programs: Alum Rock Park, San Jose; Sanborn Park, Saratoga; and Vasona Park, Los Gatos. Each Center has specialized and unique artifacts, collections, and resources that connect children with nature while teaching science.

YSI
Youth Science Institute

Half of the programs we deliver feature a nature walk and/or a hands-on encounter with our collection of live animals – from injured and non-releasable birds of prey to chinchillas, bearded dragons, and newts.

YSI believes strongly in the adage “Tell me and I forget. Show me and I remember. Involve me and I understand.” Our programs are founded on the best practices of both hands-on science and experiential environmental education, and are correlated to the science content standards for CA public schools. The hands-on nature of our programs helps children see that science is fun and exciting, and has real world applications.

YSI programs encourage the development of critical thinking skills, problem-solving skills, creativity, and teamwork that are necessary for academic success, and ultimately, economic success.



For more information go to: www.ysi-ca.org

SPOTLIGHT : TerrAvion, Dublin, CA

TerrAvion Inc. is a fast-growing company that provides aerial imagery for managing agricultural operations. They just launched an overnight image delivery service, OverView. “Think of it as a real-time map for agriculture.” explains CEO and founder, Robert Morris.

OverView is a real-time aerial imagery service for agriculture. Every week during the growing season, you can see imagery of your crops in the visual, near infrared, and thermal bands on the OverView web portal or your favorite map viewer like Google Earth. You can use these images to plan your scouting, management activities, and interventions.

Our customers in 2013 reported both saving and earning several times what they paid for OverView. Let us help you improve the operations and finances of your farm this year by ordering on our on-line system.

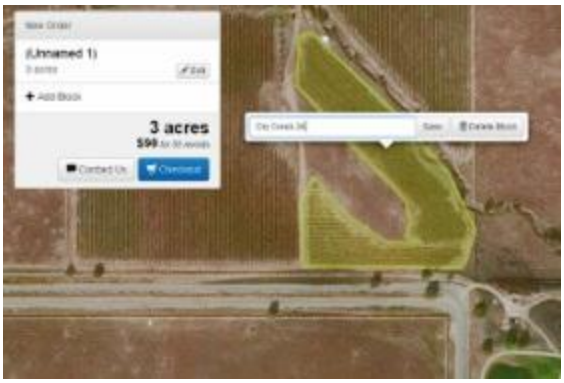
TerrAvion's OverView saves growers money and allows them to get better outcomes, whether they farm for yield or quality. We want to give you the view you need save money on inputs and get better production.

TerrAvion's OverView can be used to:

- Optimize irrigation to improve yield and uniformity, or reduce water use
- Make scouting more efficient
- Detect anomalies caused by disease or pests
- Supervise and monitor interventions

Three easy steps to use OverView:

1. Order the blocks you want to see.



2. The aircraft fly over your selected blocks and take photos you ordered every week.

3. Using the OverView web access download the data to your computer or handheld devise.

OverView allows you to:

- Save labor by letting managers take on more acres
- Improve the efficiency of operations, with better communication by having everyone looking at the same picture—literally
- More revenue from the crop, from improved timing and application of interventions
- Reduced vehicle and travel expenses, by having less frequent and more targeted trips to outlying fields

For more information about TerrAvion click here

Google's Eight Pillars of Innovation

We may all wonder how a company like Google can continue to grow but still remain innovative. Their secret is to keep focused on what they call the "Eight Pillars of Innovation". Here is a quick overview, excerpted from an article by Google's Vice President Susan Wojcicki back in 2011, but still very relevant today.

HAVE A MISSION THAT MATTERS
Work can be more than a job when it stands for something you care about. Google's mission is to 'organize the world's information and make it universally accessible and useful.' We use this simple statement to guide all of our decisions. When we start work in a new area, it's often because we see an important issue that hasn't been solved and we're confident that technology can make a difference. For example, Gmail was created to address the need for more web email functionality, great search and more storage.

THINK BIG BUT START SMALL
No matter how ambitious the plan, you have to roll up your sleeves and start somewhere. Google Books, which has brought the content of millions of books online, was an idea that our founder, Larry Page, had for a long time. People thought it was too crazy even to try, but he went ahead and bought a scanner and hooked it up in his office. He began scanning pages, timed how long it took with a metronome, ran the numbers and realized it would be possible to bring the world's books online. Today, our Book Search index contains over 10 million books.

STRIVE FOR CONTINUAL INNOVATION, NOT INSTANT PERFECTION
The best part of working on the web? We get do-overs. Lots of them. The first version of AdWords, released in 1999, wasn't very successful – almost no one clicked on the ads. Not many people remember that because we kept iterating and eventually reached the model we have today. And we're still improving it; every year we run tens of thousands of search and ads quality experiments, and over the past year we've launched over a dozen new formats. Some products we update every day.

think with Google

LOOK FOR IDEAS EVERYWHERE
As the leader of our Ads products, I want to hear ideas from everyone – and that includes our partners, advertisers and all of the people on my team. I also want to be a part of the conversations Googlers are having in the hallways.

SHARE EVERYTHING
Our employees know pretty much everything that's going on and why decisions are made. Every quarter, we share the entire Board Letter with all 26,000 employees, and we present the same slides presented to the Board of Directors in a company-wide meeting.

SPARK WITH IMAGINATION, FUEL WITH DATA
In our fast-evolving market, it's hard for people to know, or even imagine, what they want. That's why we recruit people who believe the impossible can become a reality. One example is Sebastian Thrun who, along with his team, is building technology for driverless cars to reduce the number of lives lost to roadside accidents each year. These cars, still in development, have logged 140,000 hands-free miles driving down San Francisco's famously twisty Lombard Street, across the Golden Gate Bridge and up the Pacific Coast Highway without a single accident.

BE A PLATFORM
There is so much awe-inspiring innovation being driven by people all over the globe. That's why we believe so strongly in the power of open technologies. They enable anyone, anywhere, to apply their unique skills, perspectives and passions to the creation of new products and features on top of our platforms.

NEVER FAIL TO FAIL
Google is known for YouTube, not Google Video Player. The thing is, people remember your hits more than your misses. It's okay to fail as long as you learn from your mistakes and correct them fast. Trust me, we've failed plenty of times. Knowing that it's okay to fail can free you up to take risks. And the tech industry is so dynamic that the moment you stop taking risks is the moment you get left behind.

To read the entire article go to:
https://www.thinkwithgoogle.com/articles/8-pillars-of-innovation.html

Cortex Composites

Long Beach, CA

Cortex Composites, LLC was founded in 2011 with the goal of manufacturing a sustainable building material that could replace concrete. Cortex was born from the combined efforts of Barzin Mobasher at Arizona State University, Tourney Consulting Group, Avid Innovation, Keller-Bliesner Engineering, and Curren Krasnoff.

After 3 years of product development, Cortex Composites is readying for product launch in early 2015. Cortex Composites will initially wholesale Cortex to select distributors in North America and Africa.

Cortex Composites continually researches how to improve its products. Current research and development is focused on developing application specific products in the following markets:

Residential Construction: Patios, driveways, and walkways, foundations, stucco replacement, pools, insulation, prefab housing, roof repair.

Disaster Relief: Flood prevention, boarding structures, sandbag fortification, airfields, helipads, roads.

Waste Containment: Brown fields, landfill capping, leach basins, waste water lagoon.

Cortex is a cement-impregnated composite that hardens when hydrated, forming a strong, impermeable concrete layer. Cortex is packaged in rolls making it is easy to install. It does not require mixing, forms, rebar, or troweling as is needed with poured concrete. Cortex is half an inch thick and weighs 2.9 lbs per square foot.

Pre-Hydration

Tensile strength: 37.8 Lbs/In

Radius of curvature: less than 3 Inches

Post-Hydration

Compressive strength: 10,000 psi

Puncture resistance: 2,250 psi

Flexural strength: 350 psi at 25mm displacement

Advanced Properties

Achieves localized cracking and micro-cracking; no large-scale cracks

Strengthens under strain (strain hardening) to prevent cracking and mechanical failure.

For more information go to;
http://www.cortexcomposites.com/

Agriculture is one of the important target markets for the use of Cortex.

NEXT ISSUE

Have an article, announcement, or press release you'd like to see in the next issue of Consortium Connection?

Contact us at:
bill.hogan@clhtc.com

FACTOID

Did you know that:

There exists an Innovation Hub specifically for Defense, Energy and Aerospace devoted to accelerating economic development?

See article in this issue Page 1.

PARTICIPANTS

In the News:

- iDEA Hub
- NASA
- FAA and UAS
- DOD Research
- Thermo Lift

Click on NEWS to read more

Next Generation Point-of-Use Solar Power

Frederick H. Schuchardt
Force Solaire Inc.

Force Solaire is a green technology innovator and developer with patented and patent-pending solar power and advanced energy storage technology. Force Solaire EcoPower™ is a breakthrough kinetic power generation system designed to utilize the sun to generate massive amounts of power without solar panels. For the first time ever Force Solaire will be able to provide electric power to hundreds of millions of people around the world that live without electricity today.

Solar Power Overview

Today's solar power systems involve either focused mirror arrays, focusing intense solar energy only a single spot to generate superheated steam, or solar panels consisting of photovoltaic wafers laid-out in a grid pattern receiving solar energy. In either case, the performance of these systems degrades consistently and measurably as dust, dirt, and other contaminants collect on the mirrors or the top surface of the panels.

Underlying Magic / Technology

The underlying magic of the system takes advantage of the changes in temperature during the day when solar heating occurs, but utilizes no mirrors or PVs to utilize photon energy from the sun. The system uses changes in material properties due to thermal changes or the thermal coefficient of expansion (TCE), which occurs either as the day's ambient temperatures rise or cool. The system consists of a patented unique material with a high TCE, but also carries excellent compressive force durability. The design is such that it properly orients and optimizes TCE growth in a singular direction. The TCE expansion is utilized to drive a properly designed fulcrum to compress a special fluid, so that it may be used to drive a turbine connected to the power generation system. Just as the system expands during the day, it also retracts at night, and kinetic energy storage is used to similarly drive a turbine connected to the power generation system.

Force Solaire EcoPower™

- ❑ **Next Gen POU Solar Power System**
  - ➢ **No Solar Panels required**
  - ➢ **Ubiquitous & Infinite Energy Source**
  - ➢ **Works in Fog and/or Rain**
  - ➢ **Works on and/or off-Grid**
  - ➢ **Dust and Dirt-proof**
  - ➢ **Scalable 5 kW to Multi-GW**
  - ➢ **High Power Density**
  - ➢ **Very High Reliability**
  - ➢ **Maintenance Free**
  - ➢ **20 Year Life Cycle**
  - ➢ **Recyclable**
- ❑ **Plug-and-Play**
- ❑ **Solar Power with no degradation in beauty**
- ❑ **Integrated with Force Solaire Energy Storage**
- ❑ **Produces "Dispatchable Power"**
- ❑ **Cost-Effective and Economic**
- ❑ **Safe**

Continued on Page 7

Next Generation Point-of-Use Solar Power

Continued from Page 6

The beauty of the system is its simple design. It works 24/7, rain, fog or shine. The system offers both daytime and nighttime power in a way that is immune to dust, dirt and other debris. Furthermore, the system cost and footprint is significantly lower than that of typical PV or concentrating mirror assemblies. It is a truly plug-and-play system with little installation and maintenance cost.

Force Solaire GBat-R2™

- **Sodium Nickel Energy Storage**
  - **7.7 kWh Modules**
  - **20 Year Cycle Life**
  - **> 4000 Cycles (80% DoD)**
  - **High Energy Density**
  - **Compact Footprint**
  - **Very High Reliability**
  - **Little Maintenance**
  - **Immune to Extreme Temperatures**
  - **Fully Recyclable**
- **Cost-Effective and Economic**
- **Safe and Explosion-Proof**

Major Applications

- **Stationary Applications**
  - Home owners, commercial and industrial users
  - Utility companies for microgrids
  - Renewable power project developers
  - Water pumping station operators without grid power
  - Farmers for water pumping of farms, off-grid
  - Desalinization plant operators
- **Portable Applications**
  - NDRC – For recovery from catastrophic natural disasters, technological mishaps and acts of terrorism
  - FEMA – Instant plug and play power
  - DOD – Instant consistent power for the battle field
- **Motive Applications**
  - Inductive POU power plants along freeways to provide sufficient charge for EVs and Hybrids
  - POU charging stations for hybrid/electric vehicles

For more information about Force Solaire click here:

EYE ON IT

Do YOU know there is an annual Defense Energy Summit?

DEFENSE ENERGY SUMMIT

ThermoLift was selected as a Winner of the Defense Energy Technology Challenge and presented to a panel of US Military and Utility officials at the 2014 Defense Energy Summit on November 10th-13th in Austin, Texas.

For more info go to: www.thermolift.com

ThermoLift, Inc.

Click the following link to access the **Defense Energy Summit website**

PARTICIPANTS In the News

Find more CLHTC participant news including a real-time news feed at www.CLHTC.com

NASA'S Michael Marlaire joins Joint Venture SV

Joint Venture Silicon Valley announced that longtime NASA Research Park director Michael Marlaire has been detailed to Joint Venture to head special projects for the next two years.

A 28-year veteran of the space agency, Marlaire has been director of the NASA Research Park (NRP) at NASA's Ames Research Center since 2006, directing partnership development, land use planning, leasing, property management and intergovernmental relations related to development.

Based in Silicon Valley since 1991, Marlaire served as NASA Ames Director of External Affairs, leading Ames partnerships with regional academic, business and political leaders while developing what became the NASA Research Park.

"I am so excited to be working with the leading Silicon Valley organization that's addressing the many issues facing our quality of life," said Marlaire. "I hope my long experience in the valley will be an immediate asset to pursuing Joint Venture's goals."

"Michael Marlaire's vast experience, knowledge and relationship building skills are a perfect fit for Joint Venture and the collaborative work we do," said Russell Hancock, CEO of Joint Venture. "We're fortunate to have him on our team."

Marlaire has been a member of Joint Venture's Climate Prosperity task force since 2008 and has consulted with the organization on disaster preparedness and other regional initiatives. Marlaire also serves on the NOVA Workforce Investment Board since 2003.

Marlaire, who has received numerous honors for his work with NASA including the Outstanding Leadership Medal, previously worked on the U.S. Senate Judiciary and Appropriations Committees in Washington, D. C.

He joined the federal government at NASA headquarters in 1986 as a Presidential Management Fellow. He holds a law degree, master's degrees in public financial administration and American history and a bachelor's degree in history and political science, all from Southern Illinois University.

About Joint Venture Silicon Valley

Joint Venture Silicon Valley was established in 1993. A non-profit organization, the group convenes the region's leaders across every major sector – government, business, academia, labor, and community organizations. The organization provides data and analysis on our region's challenges, and leads initiatives to address those challenges. Joint Venture is funded by cities and counties, local companies, colleges and universities, labor and workforce institutions and foundations. For more information, visit www.jointventure.org.

For more information about this article contact:
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New Participants in the China Lake High Tech Consortium

The Consortium is a unique partnership of government, industry, academia, non-profits and equity investors working collaboratively to address technology requirements for both the military and commercial marketplace. Utilizing the vast array of talents in the Consortium solutions are sought for issues surrounding technology transfer, commercialization of capabilities, non-traditional acquisition for the warfighter, multi-use product development, education, training and local economic growth.

The China Lake High Tech Consortium is pleased to announce that with the addition of the new members listed below the number of individual participants now exceeds 500, representing interests from over 100 organizations in 18 different States and the District of Columbia. The Consortium focuses on Entrepreneurship and Technology Innovation. Some ongoing technology focus areas include:

- Energy security
- Unmanned aerial systems
- Unmanned ground and undersea systems
- Energetics
- Combustion engineering
- Nanotechnology
- Biosciences
- Green and clean technology
- Cyber security

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LA Economic Development Corporation

Los Angeles, CA

The LA EDC's mission is to attract, retain and grow businesses and jobs in the regions of greater Los Angeles County.

Just as the region's economy has grown, so have the breadth and impact of the LA EDC's programs and services. Today, the award-winning Business Assistance Program has helped create or retain over 190,000 jobs, with an estimated labor income, including wages and benefits, of approximately $12 billion. Taken together with the supported indirect and induced economic activity, a total of more than 400,000 annual jobs with labor income of more than $21 billion were impacted, accounting for an estimated $850 million in property and sales tax revenues to the County of Los Angeles.

Our teams of expert economists from the Kyser Center for Economic Research and the Economic and Policy Analysis Group produce important reports that help inform decision-making. And we promote proactive leadership for a strong economy through the Southern California Leadership Council and facilitate global connections through the World Trade Center Los Angeles-Long Beach (WTC L.A.-LB).

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One of the LA EDC initiatives is called Innovate Los Angeles (inLA). Its mission is to promote LA County as a leading global center for innovation and entrepreneurship rooted in boundless creativity and diversity. The initiative has five drivers:

1) Attract: Retain and attract talent critical to developing, growing and sustaining a vibrant growth ecosystem.
2) Collaborate: Help entrepreneurs find resources, connect and collaborate with others in Los Angeles.
3) Support: Ensure local government plays a more impactful and active role in supporting LA's innovation economy.
4) Partner: Bring together public-private partners to develop infrastructure necessary to house and support innovative industries.
5) Promote: Implement strategies to promote Los Angeles County's growth ecosystem locally and nationally.

For more information about the LA EDC go to:
http://laedc.org/about-laedc/mission-and-history/

China Lake High Tech Consortium

The Consortium is a unique partnership of academia, industry, government, non-profits and equity investors working collaboratively to provide creative solutions for the military and commercial marketplace.

ANNOUNCEMENTS

Now Accepting Spotlight articles for the next issue of *Consortium Connection*
Please forward submissions to **bill.hogan@CLHTC.com** by **8 February 2015**, to be included in the **WINTER 2015** issue.

More information about California's Innovation Hub for Defense, Energy and Aerospace (iDEA Hub) may be found at: **www.ideaihub.org**

idea
CALIFORNIA'S INNOVATION HUB FOR DEFENSE, ENERGY & AEROSPACE

To learn more about CLHTC click below

JOIN the Consortium

For comments or questions please contact:
bill.hogan@clhtc.com
or visit us at
www.CLHTC.com