M-CALC Conference

The characteristics of high performance electronic applications, such as infrared camera, cooled semiconductor devices and chips, and high temperature superconductivity, are known to improve when their operating temperatures are lowered below room temperature. To realize these enhancements in field deployed systems, low cost, reliable cryogenic refrigerators ("cryocoolers") must be available to the system integrators. Information exchange between cryocooler vendors and the user communities are essential to facilitate the emergence of totally integrated systems where the cooled electronics subsystem is optimally integrated with energy-efficient, highly reliable, and potentially low cost cryocoolers. In order to expedite the information flow between user communities and cryocooler vendors, Strategic Analysis, Inc. is organizing the fourth industry assessment workshop discussing military and commercial applications for low-cost cryocoolers:

M-CALC WORKSHOP
November 20-21
Hyatt Islandia, San Diego, CA

The workshop itself is being sponsored by Strategic Analysis in cooperation with DARPA, NVESD and M. Nisenoff Associates.

Science and Technology Reliance

Earlier this year, the Studies and Analysis Team at SA again won the support contract for Defense Science and Technology (S&T) Reliance, continuing our 8 years of support for the process. Defense S&T Reliance, under the leadership of the Deputy Under Secretary of Defense for Science & Technology (DUSD (S&T)), provides the framework and assessment process to enable the DoD S&T community to work together to enhance the Department’s S&T program and strengthen cooperation among the Services and Agencies. The Reliance process encompasses the coordination and publication of the DoD’s Defense S&T Plans. This documentation includes:

- The Defense Technology Area Plan (DTAP), which focuses the DoD investment in Applied Research (6.2) and Advanced Technology Develop-ment (6.3) on militarily significant technologies in twelve specific areas. The DTAP takes a horizontal perspective across the Military Departments’ and Defense Agencies’ efforts to present the DoD focus, content, principal objectives, and investment for a given technology.
- The Joint Warfighting S&T Plan (JWSTP) is an effort by the Office of the Secretary of Defense, Joint Staff, Military Services, combatant commanders, and defense agencies to provide a focus on the specific technologies needed to support the Joint Warfighting Capability Objectives (JWCOs) needed by the joint force of the future.
- The Basic Research Plan (BRP) serves to focus, integrate and DoD investment in basic research.
- The Defense Technology Objectives (DTOs) volume provides focus for the S&T investment.

The primary objective of this workshop is to perform an industry assessment on the current status of low cost, highly reliable cryocoolers and to estimate the current and perceived needs of the cooled electronic communities. Emphasis will be focused on low cost cryocoolers operating the temperature range below 232 K (-40°C) with attention to the requirements of the user communities on reliability, efficiency, cost, temperature stability, EMI, vibration, audible noise, etc. During the workshop, there will be a series of presentations from the user communities (such as IR cameras, cooled semiconductor devices and chips, medical applications, high temperature superconductivity) outlining their projection of cryocoolers needed for present and future generation of equipment, and presentations from a variety of cryocooler vendors outlining what is currently available. Following these presentations, there will be formal and informal discussions on what enhancement in cryocooler technologies must be implemented to meet the needs of the user communities. Space will be available for cryocooler vendors to display their products, brochures and technical data.

For information about M-CALC IV, go to the conference website address at http://www.sainc.com/MCALC4, or to indicate interest in this workshop, please contact Daryl Treger at treged@sainc.com or 703-276-2202.

DARPA Speaker Series on BioWeb

Strategic Analysis has taken a new direction with DARPA’s BioWeb, focusing on the Biotechnology Speaker Series. The monthly series helps promote interaction between academia, government and industry, particularly within the government to include agencies within and outside of the DoD.

Each month’s speaker is highlighted on BioWeb, providing the information on the speaker’s background and topic area. The website is available to download information such as the speaker’s CV, abstract, and even the presentation after the meeting has passed. Not only can you find information on the various speakers but the site allows you to RSVP on-line, as well as make suggestions for speakers and topic areas for the future. The fall line-up will prove to be very exciting, kicking off with leading scientist in nanotechnology, Dr. Chad Mirkin. To view the fall schedule on-line, and for more information, please visit:

www.sainc.com/bioweb

Speaker Series 2003 Fall Line-Up

September 30, 1:30 PM
Dr. Chad Mirkin,
George B. Rathman Professor of Chemistry and Director of the Institute for Nanotechnology
Northwestern University
“Nanotechnology”

October 22, 10:30 AM
Dr. Dianne Newman,
Clare Boothe Luce Assistant Professor of Geobiology and Environmental Science
California Institute of Technology
“Antibiotics’ in Microbe-Mineral Interactions”

December 2, 10:30 AM
Dr. Leroy Hood,
President, Director and Professor Institute for Systems Biology and University of Washington
“Systems Biology”
Science and Technology Reliance

... continued

Each DTO identifies a specific technology advancement that will be developed or demonstrated, the anticipated date of technology availability, and the specific benefits resulting from the technology advance.

The current draft of the JWSTP, now under development, will be incorporating significant changes in its structure and layout. In the past, the JWSTP has encompassed thirteen JWCOs. Responding to guidance from the Joint Staff to implement a new vision for Joint Functional Concept (JFCs), the current JWSTP will have 5 JFCs that encompass the old 13 JWCOs in addition to several new areas of interest to the Joint Staff. This new structure will be more responsive to the new areas of interest to the Joint Staff. This vision for Joint Functional Concept (JFCs), the encompassed thirteen JWCOs.

In the past, the JWSTP has changed in its structure and layout. The DARPA Communicator Program will be incorporating significant changes in its structure and layout.

DARPA Communicator Program

The goal of the DARPA Communicator Program is to develop and demonstrate “dialog interaction” technology that enables warriors to talk with computers. Information will be accessible on the battlefield or in command centers without ever having to touch a keyboard. The Communicator will be wireless and mobile, and will function in a networked environment. Dialog interaction software distributed in the networked environment uses a “dialog management and context tracking” capability to facilitate and coordinate conversations between human users and a suite of computer applications. All the systems developed in Communicator used this common speech dialog architecture called the Galaxy Hub, or the Communicator Software Infrastructure (GCSI). The introduction of this architecture and its widely accepted use, both in the US and EU for automated dialog, is one of the Communicator’s major accomplishments.

The DARPA Communicator program initially demonstrated the use of dialog interaction in a travel context. The systems were built with the aim to be able to complete complex (multiple city) travel reservations including air, hotel, and rental car bookings by using conversational interaction between a human user and a non-human system. One example of such a system was developed by CMU, whose Communicator system is still functional and can be reached at 1-877-268-7526.

After the successful development and evaluation of the travel systems, 5 militarily applied systems were developed and transitioned. These systems were Lockheed Martin’s “SUSIE” System aboard the Navy Ship Sea Shadow, CMU’s F/A-18 maintenance mentor (LARRI), Speechworks’ United Airlines Lost Luggage System, Daimler-Chrysler’s on-board vehicle navigation system, and HRL/University of Colorado team’s on-board navigation and user assistance system.

While the program ended in December 2002, there are plans to develop a follow-on program called Symphony to demonstrate the generalizability and functionality of computer-based dialog technology in military and civilian environments using the Galaxy Hub Architecture developed under DARPA Communicator.

For more information about the DARPA Communicator Program please contact Daisy Kwok at ckwok@snap.org.

DSB Summer Study

A team of technical and policy analysts from SA will be supporting the Defense Science Board’s Summer Study on DoD’s Roles and Missions in Homeland Security this August in Irvine, California. The Summer Study will be looking closely at five components of DoD involvement in homeland security: the roles and missions specific to DoD - including the National Guard and Northern Command; interagency involvement; technology and systems; emergency preparedness and response; and information sharing and analysis.

For more information about the SA-supported DSB Task Forces, including the Summer Study, please contact Stacie Smith at smiths@sainc.com.

New Faces at SA

John Sedriks, PhD - Dr. John Sedriks joins SA as a part-time employee after 18 exceptional years as a Program Officer at the Office of Naval Research (ONR), Materials Science and Technology Division. His specialty is corrosion control by metrical modifications, and is author to some 60 journal articles, books, and sections of books. In this area, Dr. Sedriks is best known for his book on Corrosion of Stainless Steels, published by John Wiley and Sons. Dr. Sedriks was given the Frank Newman Speller Award of NACE for corrosion engineering in 1989, and was elected Fellow of ASM International in 1991, and Fellow of NACE International in 1995. In 2002, he received the Miller Peterson Award for Corrosion Engineering from the Baltimore-Washington Chapter of NACE International and the Cheapskate Award for characterizing cost-saving nano-structured materials for the Navy from the ONR.

Erena LeTourneau - Erena joins SA as a Program Analyst. She is responsible for providing analytical and administrative support for the Defense Science & Technology Reliance process. In addition to her Reliance duties, she will be involved with the editing and publication of various newsletters created by Strategic Analysis. Erena received her BA in Communication from George Mason University.

New Publications by SA Staff

Special Issue on Spintronics Technology. May 2003, Proceedings of the IEEE, Volume 91, Number 5, Editors S. Wolf and D. Treger.


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