

LVOC academic alliances soar with UC Davis, others

By Mike Janes

It's only natural that Sandia would seek strong academic alliances. The cultivation of ongoing partnerships with key universities and colleges, the Labs has demonstrated time and time again, can lead to funding opportunities, innovation, and entrepreneurship. They can also provide a pipeline to recruitment of future generations of engineers and researchers.

There is no exception to this rule at Sandia/California, but the site's Livermore Valley Open Campus (LVOC) initiative has energized the potential for enhanced academic alliances even more than before. In fact, says Andy McLroy (8310), academic alliances are vital to the future success of the open campus.

"The LVOC exists to enhance Sandia's national security mission impact by strengthening Sandia's science and technology base through world-class collaborations," says Andy, who serves as the site's senior manager for LVOC development. "Combined with key industrial partnerships, the LVOC academic alliance provides Sandia with a platform for building collaborative programs that build our core competencies and create lasting partnerships whose value extends beyond a single project."



AS PART OF THE ACADEMIC ALLIANCE with UC Davis, Sandia sponsored the 2013 UC Davis C-STEM Scholarship for northern California college-bound seniors pursuing computing-related post-secondary study in a university. Shown here are Harry H. Cheng, Director of the C-STEM Center at UC Davis; scholarship recipient Kevin Chen, a graduate of Amador Valley High School in Pleasanton; and Mike Hardwick.

'Strategic roadmap' with UC Davis strengthened by LVOC presence

Last winter, the first significant LVOC-based industry partnership — a 5-year Cooperative Research & Development Agreement (CRADA) with local solar startup Cool Earth Solar — was announced. Now, as the shining example for LVOC academic partnerships and perhaps a model for how others might work, Sandia/California is in the midst of a 5-year "strategic partnership roadmap" with the University of California, Davis (UC Davis), a collaboration that Mike Hardwick (8240) and Chris Moen (8256) say will only be stronger because of the new and growing presence of the LVOC.

"When UC Davis executives arrived here [for a kickoff meeting], their reaction was pretty amazing," Mike says. "Before, there were always barriers and they had to go through multiple layers of security to get here. This time, they immediately recognized the open campus as a lowering of the barriers, and they were clearly energized."

Chris co-leads the science and engineering education thrust area of the UC Davis roadmap. The other thrust areas, each co-led by a Sandian who shares leadership duties in his or her area with a UC Davis counterpart, include sustainable energy systems (Dawn Manley, 8350), cybersecurity (Karim Mahrous, 8958), and systems engineering and manufacturing (Mike). Mike also serves as the partnership's steering committee chair along with Enrique Lavernia, a longtime champion of

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Sandia who now serves as the dean at UC Davis's College of Engineering.

Sandia's relationship with UC Davis predated the LVOC initiative, but Chris and Mike say the open campus was a clear motivation for both formalizing and broadening the partnership. Former Div. 8000 VP Rick Stulen and UC Davis chancellor Linda Katehi, Mike explains, tasked managers with both organizations to draft a roadmap that would focus existing technical and programmatic synergies, and the end result was a memorandum of understanding and the strategic roadmap.

Education thrust area off and running

"Our connection with UC Davis always seemed like a natural in terms of doing something big together instead of mere project-by-project collaborations," says Mike. "Rick and Linda's leadership was a driving force, and Enrique's move from UC Irvine to UC Davis really made a big difference since we'd had a good relationship with him for years. The launch of the LVOC was the final piece of the puzzle and sealed things for us."

The strategic roadmap's science and engineering education thrust area has been active from the very beginning, says Chris.

Sandia has started sponsoring an annual Engineering Design Award competition at UC Davis, which recognizes innovation in engineering design related to a national security mission such as defense, natural resources, or the economy. At the university's 2013 Engineering Design Showcase in May, a team of students was recognized by Sandia for its project, "Real-time amperometric glucose biosensor for facilitation of biofuel research."

In addition, Chris says, the lab now provides Sandia mentors for capstone design projects that most UC Davis engineering seniors are required to complete. Finally, the lab is helping to expand UC Davis's C-STEM initiative (Center for Integrated Computing and STEM Education) into the San Francisco Bay Area by introducing it to the Livermore Valley Unified School District and the Oakland School District. One of the leading C-STEM outreach activities, an annual "RoboPlay" competition designed for K-12 students, will take place at Sandia's open campus in 2014.

The sustainable energy systems thrust area, Mike says, has largely been focused on proposal writing and generating opportunities to work with state leaders in Sacramento. The cyber thrust area plans to host a workshop at UC Davis on cybersecurity policy and research.

Finally, the systems engineering and manufacturing team is preparing to play a key regional role in the National Network for Manufacturing Innovation (NNMI), a federally sponsored initiative that serves to create an effective manufacturing research infrastructure for US industry and academia to solve industry-relevant problems. At the LVOC earlier this month, Sandia and UC Davis piloted the Design to Manufacturing Academy (DMA) for high school students, where participants were exposed to authentic manufacturing issues and took on a project of their own.

"They were able to work with Sandians to identify requirements for an actual design problem, design a solution, conduct a structural analysis, fabricate prototypes and test them in a laboratory," says Mike. "The program gave them a rare and valuable opportunity to spend time with real engineering professionals and immerse themselves in an actual development environment."

Others poised to join LVOC academic alliance

While the collaboration and strategic roadmap with UC Davis has perhaps been the most visible success story in regards to LVOC academic alliances, others are also emerging.

The University of Illinois Urbana-Champaign and Sandia have signed an MOU that specifically embraces the LVOC. Senior leaders from Sandia, Lawrence Livermore National Laboratory (co-partners with Sandia on the LVOC), and the university have visited each other's campuses and are examining how the partnership can most effectively move forward. A kickoff celebration to announce the new MOU is planned at the LVOC next



MATT TURKIE (second from left), principal of the School of Engineering and Sciences in Sacramento, received the C-STEM School of the Year award, sponsored this year by Sandia, for excellence in integrated learning of computing and STEM subjects. From L-R, Dr. Ralph Hexter, UC Davis Provost and Executive Vice Chancellor; Turkie; Dr. Enrique Lavernia, Dean of the UC Davis College of Engineering; and Mike Hardwick. (Photos courtesy of UC Davis)

year, with key leaders and alumni from the university expected to attend.

Other schools, particularly those in the Bay Area, are likely to partner with Sandia on the LVOC in the future, according to Kelly Nykodym (8522), who is leading the overall LVOC academic alliances effort. Ongoing conversations with Las Positas College continue to take place, as do discussions with San Jose State, particularly around opportunities in the cybersecurity research domain.

Kelly, whose "day job" involves talent acquisition for the California site's HR group, says the LVOC has created a vibrant, creative, interactive learning environment that provides a new realm for recruitment.

She points to recent examples such as an LVOC-hosted event involving some 35 young women from Stanford, UC Berkeley, and UC Davis that featured lab tours, technical discussions, and lunch with hiring managers and Sandia mentors. Additionally, the LVOC hosted an event that welcomed professors from traditionally black colleges and universities, and a science and engineering networking event in mid-July specifically for UC Berkeley students.

"There are often misperceptions among university students, even those right here in our backyard, about what it means to be a DOE national security lab, or what Sandia does," says Kelly. "Perhaps they think, 'a weapons lab is not for me,' or maybe they've just never been exposed to the variety of work we do that could appeal to them. Now, with these LVOC events and a new sense of openness, they can come and learn firsthand what we're about, make a personal connection, walk around freely, and learn about career paths that they might not have considered before. From recruitment's point of view, this is very exciting."

How 'real' is the LVOC?

Since its opening in September 2010, the Livermore Valley Open Campus has moved far past the conceptual stage and is now a vibrant, active presence on the Sandia/California campus. Here are some facts and figures:

- The LVOC comprises 84 acres on the Sandia/California site and additional space at Lawrence Livermore National Laboratory.
- The open campus includes more than 100,000 square feet of office, lab, and auditorium space.
- The internationally renowned Combustion Research Facility (CRF) is the heart of the LVOC at Sandia/California, while the High Performance Computing Innovation Center is central to the LLNL LVOC component.
- The Cybersecurity Technologies Research Laboratory (CTRL) opened on the LVOC in June 2012 and regularly hosts large meetings and visits, as well as serving as a hub of cyber-related research activity at the site.
- A 5-acre Clean Energy Demonstration Field sits across the CTRL, the centerpiece of which is now a pilot project with local startup Cool Earth Solar.
- The LVOC regularly hosts a farmer's market for Sandia/California and LLNL and other "open" activities such as the annual Math and Science Awards for local high school girls.
- As an initial step in making the LVOC the "front-facing" part of Sandia/California, visitors to the site, including job candidates, will soon be directed to a renovated Post 17 (near the CRF) for check-in and processing rather than to Bldg. 911.
- Plans for a large administrative building and additional LVOC programmatic elements are underway.