

## CRADAs

### *Cooperative Research and Development Agreements*

By Lara Getz

November 29, 2011

#### IN BRIEF

- Federal Laboratories are **unique** for the resources, funding and wide range of experts at their disposal. As a result, they are capable of both exploring and **developing state-of-the art technology**.
- There are often serious obstacles, however, when trying to commercialize these innovations and transfer them to the private sector.
- A Cooperative Research and Development Agreement (CRADA) is one way to simplify this process.
- CRADAs greatly benefit both federal and private industries by allowing the **free exchange of information and research** in order to complete projects more effectively and **hasten the introduction of new technology into the commercial sector**.

### What is a CRADA?

- ◇ A Cooperative Research and Development Agreement (CRADA) is an agreement between a Federal Laboratory and private company.
- ◇ The lab and company's facilities, equipment, resources, and personnel are shared in order to complete a joint project.
- ◇ The ultimate goal of a CRADA is for a government lab and private company to cooperate in a technical field so that both can benefit from the technical results derived from the endeavor.
- ◇ A main feature of a CRADA is that the federal lab cannot transfer any funds to the private party (i.e. the private industry is responsible for funding).
- ◇ A Limited Purpose CRADA (LP-CRADA) is an agreement in which simply the material and necessary equipment for the research is exchanged or evaluated by a lab or company. While there is still mutual interest in the research results, there is no joint work conducted under a LP-CRADA.

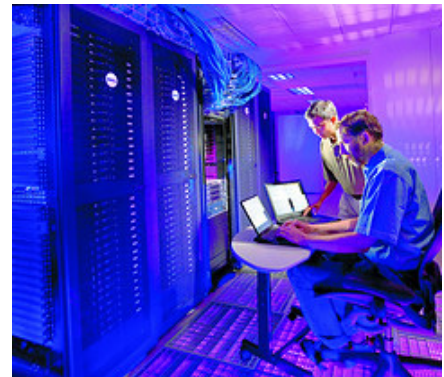


IMAGE CREDIT: SANDIA NATIONAL LABORATORY

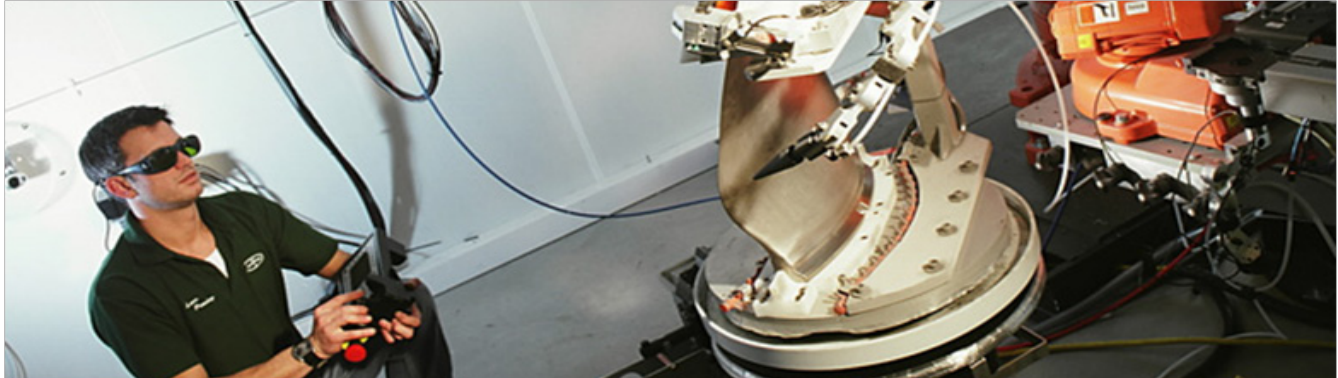


IMAGE CREDIT: LAWRENCE LIVERMORE NATIONAL LABORATORY

## A Historical Perspective on CRADAs

- The concept of cooperation between the government and private industry has a long history in the United States, reaching back to WWII when major collaborative efforts were launched in pharmaceutical manufacturing, petrochemicals, synthetic rubber and atomic weapons.
- The 1970s marked a new phase in research and development cooperation with the establishment of the University-Industry Cooperative Research program of the National Science Foundation; this system would be expanded and applied to many different initiatives throughout the 1970s and 1980s.
- The Bayh-Dole Act, passed in 1980 and later amended in 1986, was another significant step towards the creation of the CRADA, as it simplified the process for non-profit institutions to patent and license the results from publicly-funded research.
- **The legislation allowing Cooperative Research and Development Agreements was passed in 1986, as an amendment to the Stevenson-Wydler Act of 1980.**
- In 1989, the Technology Transfer Act was modified to allow contract-operated federal laboratories to also participate in CRADAs.
- Between 1989 and 1995 alone, the Department of Energy signed more than 1,000 CRADAs.
- After 1995, the financial support from Congress to encourage industry partnerships, such as CRADAs, declined, causing federal laboratories to look towards licensing technology as the primary form of partnership.
- Between 1995 and 2001, the number of CRADAs decreased by more than 60%, but the number of licenses more than tripled. There was also a significant increase in work-for-others agreements on behalf of many federal labs. However, these do not include the same levels of beneficial collaboration as occurs in CRADAs.
- In 2005, there was a shift regarding technology transfers. The Energy Policy Act of 2005 was passed, which required the Department of Energy to centralize their tech-transfer policy (the DOE is one of the many government agencies that uses CRADAs regularly).

- In 2009, there was a combined 4,219 active traditional CRADAs in the Department of Defense, Department of Health and Human Services, Department of Energy, National Aeronautics and Space Administration, U.S. Department of Agriculture, Department of Homeland Security, Department of the Interior, Environmental Protection Agency and Department of Veteran Affairs.
- Since 2005, there has been a consistent, gradual increase in the number of active CRADAs each year.

## Why Enter into a CRADA?

There are many benefits for parties to enter into cooperative research and development agreements. CRADAs:

- Promote national technological competitiveness
- Encourage the quick transfer of research results and technological developments into the marketplace
- Allow the lab or company to catch the “knowledge spillover” of other CRADA participants
- Reduce redundancy or duplication between the participating parties
- Help accelerate the commercialization of new technologies
- Hasten the process of transferring research results from universities and labs to industries
- Grant industries and non-governmental researchers access to federal labs
- Save both time and resources in efforts to achieve mutually beneficial results
- Allow the federal lab and its partner to share patents and patent licenses while also permitting either the lab or company to hold exclusive rights to a single patent or patent license
- Enhance the credibility of a company through its work with a federal laboratory
- Increase a company’s technical capabilities and standards while raising the federal lab’s awareness of the commercial sector and commercialization process



IMAGE CREDIT: LAWRENCE LIVERMORE NATIONAL LABORATORY

## Intellectual Property Rights

- CRADAs allow the federal lab and its private partner to share patents and patent licenses for the research conducted (or inventions created) during the agreement, while also permitting one of them to hold exclusive rights to a single patent or patent license.
- While the private firm can be given the rights to any of the intellectual property resulting from the CRADA, the government retains a nonexclusive license to the intellectual property.
- Additionally, under the Freedom of Information Act, all results from the CRADA can be kept confidential for up to 5 years.
- Any proprietary information that a partner brings to the CRADA is protected.

## Examples of CRADAs

- CRADA between Sandia National Laboratories and SunPower Corp:

In February 2010, these two groups agreed to enter into a CRADA in order to conduct research on integrating large-scale photovoltaic (PV) systems into the grid. The CRADA will gather a combined \$1 million from the U.S. Department of Energy and SunPower Corp.

According to Terry Michalske, the director of Energy and Security Systems at Sandia, *“This partnership will enable Sandia and SunPower to capitalize on their respective strengths and bring together PV modeling and analysis expertise with extensive system data to answer many of the urgent questions facing utility companies and their customers who are turning to clean, solar energy resources.”*

Already by July 2010 Sandia and SunPower had started to create new models and simulation tools and were preparing to release their research results in joint publications.

- CRADA between Lawrence Livermore National Laboratories and Veritainer Corp:

In May 2010 these two groups signed a CRADA in order to refine and enhance Veritainer’s patented crane mounted scanning (CMS) technology.

This particular CRADA is planned to last 3 ½ years and accrue \$4 million in funding. The technology being perfected and expanded in this CRADA makes it possible to scan 100% of shipment containers that pass through ports across the world and go unopened until they reach their destination. This is a crucial development in the effort to prevent the shipment of radiological materials and/or nuclear threats.

According to Steven Kreek, the leader of LLNL’s Nuclear Detection and Countermeasures Research Program, the CRADA will help improve the sensitivity of the CMS technology in addition to making it an effective and valuable counterterrorism tool.

## Other CRADA Successes

CRADAs with the Department of Defense:

- DOD and General Dynamics: (Mounted Combat System) MCS 120mm Primary Weapon Assembly (PWA)
- DOD and BAE York: Paladin Program Integrated Management (PIM)

CRADAs with the Department of Energy, Office of Fossil Energy (Through the National Energy Technology Laboratory):

- DOE-FE/NETL and University of Wyoming's Western Research Institute: WRITE Process for Pipeline Ready Heavy Oil
- DOE-FE/NETL and University of Wyoming's Western Research Institute (WRI) with Alliant Energy, Etaa Energy, Inc., and Montana-Dakota Utilities: Thermal Precombustion Mercury Removal Process for Low-Rank Coal-Fired Power Plants
- DOE-FE/NETL and University of Wyoming's Western Research Institute: Halogenated Volatile Organic Compound (HVOC) Field Screening

*Lara Getz is an intern at the American Security Project and is currently pursuing a Bachelor's Degree in Political Science and International Relations at Tulane University.*

### Further Reading

Mowery, David C. "Collaborative R&D: how effective is it?" *Issues in Science and Technology* (Fall 1998) <http://www.freepatentsonline.com/article/Issues-in-Science-Technology/53435947.html>

"CRADAs & MTAs," *National Institute of Health Office of Technology Transfer* [http://www.ott.nih.gov/cradas/model\\_agree.aspx](http://www.ott.nih.gov/cradas/model_agree.aspx)

"Public Law 99-502-Oct. 20, 1986," <http://history.nih.gov/research/downloads/PL99-502.pdf>

"CRADA," *SPAWAR Systems Center Pacific* <http://www.public.navy.mil/spawar/Pacific/TechTransfer/Pages/CRADA.aspx>

"Sandia National Laboratories and SunPower Corp. extend solar energy research partnership," *Sandia National Laboratories* (July 28, 2010) [https://share.sandia.gov/news/resources/news\\_releases/sunpower/](https://share.sandia.gov/news/resources/news_releases/sunpower/)

"LLNL and Veritainer Corp. sign cooperative research and development agreement," *Lawrence Livermore National Laboratories* (May 12, 2010) <https://www.llnl.gov/news/newsreleases/2010/NR-10-05-06.html>

"Cooperative Research and Development Agreement CRADA," *United States Geological Survey* (May 20, 2009) <http://www.usgs.gov/tech-transfer/what-crada.html>

Ham, Rose Marie and Mowery, David C. "Improving the effectiveness of public-private R&D collaboration: case studies at a US weapons laboratory," *Haas School of Business, University of California* (September 12, 1997) [http://ist-socrates.berkeley.edu/~scotch/ham\\_mowery.pdf](http://ist-socrates.berkeley.edu/~scotch/ham_mowery.pdf)



Hayden, Ken. "CRADA: Cooperative Research and Development Agreements," *The Property Professional* Vol. 21 Issue 1 (January/February 2009) <http://www.npma.org/Archives/CRADA%2021-1.pdf>

Ryan, Tim. "CRADAs: A DoD Perspective," *Presentation to FLC NE Region* (March 2, 2010) <http://www.fcnortheast.org/WestPoint2010/Ryan.pdf>

"Advanced Research: CRADA Successes," *National Energy Technology Laboratory* [http://www.netl.doe.gov/technologies/coalpower/advresearch/crada\\_successes.html](http://www.netl.doe.gov/technologies/coalpower/advresearch/crada_successes.html)

"Technology Transfer: Several Factors Have Led to a Decline in Partnerships at DOE's Laboratories," *United States General Accounting Office, Report to the Chairman, Committee on Natural Resources, U.S. Senate* (April 2002) <http://www.gao.gov/new.items/d02465.pdf>

Sands, Derek. "DOE's technology-transfer chief aims to simplify licensing, other procedures," *National Laboratories* (November 29, 2010)

National Institute of Standards and Technology, U.S. Department of Commerce. "Federal laboratory technology transfer activity indicators, by selected U.S. agency: FY 2007," *Summary Report to the President and Congress* (January 2009) [www.nsf.gov/statistics/seind10/c4/tt04-22.xls](http://www.nsf.gov/statistics/seind10/c4/tt04-22.xls)

National Institute of Standards and Technology, U.S. Department of Commerce. "Federal Laboratory Technology Transfer: Fiscal Year 2009," *Summary Report to the President and Congress* (March 2011) <http://www.nist.gov/tpo/publications/upload/Federal-Lab-TT-Report-FY2009.pdf>

## **Building a New American Arsenal**

The American Security Project (ASP) is a bipartisan initiative to educate the American public about the changing nature of national security in the 21st century.

Gone are the days when a nation's strength could be measured by bombers and battleships. Security in this new era requires a New American Arsenal harnessing all of America's strengths: the force of our diplomacy; the might of our military; the vigor of our economy; and the power of our ideals.

We believe that America must lead other nations in the pursuit of our common goals and shared security. We must confront international challenges with all the tools at our disposal. We must address emerging problems before they become security crises. And to do this, we must forge a new bipartisan consensus at home.

ASP brings together prominent American leaders, current and former members of Congress, retired military officers, and former government officials. Staff direct research on a broad range of issues and engages and empowers the American public by taking its findings directly to them.

We live in a time when the threats to our security are as complex and diverse as terrorism, the spread of weapons of mass destruction, climate change, failed and failing states, disease, and pandemics. The same-old solutions and partisan bickering won't do. America needs an honest dialogue about security that is as robust as it is realistic.

ASP exists to promote that dialogue, to forge consensus, and to spur constructive action so that America meets the challenges to its security while seizing the opportunities the new century offers.



American Security Project

[www.americansecurityproject.org](http://www.americansecurityproject.org)