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**SUBMISSION NUMBER:**

**2012 FLC Outstanding  
Technology Transfer Professional Award  
Section A – Contact Information**

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**NOMINEE #1 INFORMATION**

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**NOMINEE #2 INFORMATION (if you plan to submit more than two nominees for this award, provide the contact information on the following page)**

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## **2012 FLC Outstanding Technology Transfer Professional Award Section B – Nomination Narrative**

Deborah Payne is the Manager of CRADA and Work for Others Agreements at Sandia National Laboratories (SNL). She has made significant contributions to the transfer of federally developed technology by focusing on creating innovative ways to establish strategic partnerships with industrial partners in the U.S. and internationally, as well as taking a leadership role in Department of Energy/National Nuclear Security Administration's (DOE/NNSA) Technology Transfer Working Group to identify and implement improvements to technology transfer policies.

### **Umbrella CRADAs**

Umbrella Cooperative Research and Development Agreements (CRADAs) are a concept which Deborah Payne has been implementing with her department. They have been very successful in helping to establish strategic partnerships between industry and SNL over the past five years.

The idea for the Umbrella CRADAs came about by brainstorming with her team to identify how best to facilitate long-term strategic relationships with industry. In the past, CRADAs were taking quite a bit of time to establish. In most cases, the CRADAs were tactical and driven by the individual project and immediate needs rather than by SNL's overall missions and goals. Single-project CRADAs are needed in some instances, but in order to establish institution-to-institution relationships, Deborah realized a new type of mechanism would be needed to facilitate the collaboration on broader sets of technologies.

The Umbrella CRADA concept took the existing DOE/NNSA agreement mechanism and switched it to a more strategy driven approach. Now SNL has the largest funds-in CRADA program in the DOE/NNSA complex, at least in part due to this ability to establish and nurture strategic relationships through the use of Umbrella CRADAs. These long-term partnerships with industry facilitate technology transfer, as well as cooperative research and development that enables SNL to meet its DOE/NNSA mission requirements.

### **Benefits of Umbrella CRADAs**

#### *Time and cost savings on contracts*

A broad scope of work is determined and terms and conditions are negotiated up front with partners. This means that cooperative research projects can be initiated more quickly as only a specific statement of work and cost, schedule and performance details need to be agreed upon. There are no time-consuming negotiations on terms and conditions necessary for each project since they've already been covered in the Umbrella CRADA. Speed is a driver for industry, and saving money on agreement processing and legal costs is welcomed by both SNL and their industry partners.

### *Cooperation is encouraged*

Technology transfer is a body contact sport—people must come together. Having an Umbrella CRADA in place creates an understanding through all levels of an organization that cooperation is encouraged by both institutions. It makes it easier for SNL’s principal investigators to initiate contact with strategic partners and vice versa. Points of contacts are established, which makes it easier for individuals on both sides of the agreement to find their way through what can often be a maze of bureaucracy. Knowing who to call overcomes at least one initial hurdle on the path to technology transfer.

### **Examples of Umbrella CRADAs**

#### *Goodyear/SNL*

One example of a successful Industrial Partnership that has made use of an Umbrella CRADA is the partnership with Goodyear Tire and Rubber Company. This partnership has been successful for both SNL and the company. The Goodyear Partnership focused on using Sandia’s technology for tire applications, but SNL’s national security mission has also been well-served. Enhanced solution algorithms, resulting from the collaboration, have enabled many computational mechanics simulations for nuclear weapons and other security applications.

SNL has been able to help Goodyear do detailed tire simulations very quickly. This led to fundamental changes in the tire design process allowing computational simulation to replace many prototype builds and tests. Over the past 5 years, this robust form of computational simulation has been used in the design of almost every new product, including most recently, Goodyear’s Fuel Max line of tires. Goodyear has been able to benefit from improved products, shorter time to market for new products, and has seen impressive sales revenue increases over the past several years.

The SNL/Goodyear strategic partnership has recently expanded to focus on fully coupled thermo/mechanical rolling simulations among other types of simulations. Fully coupled thermo/mechanical rolling simulations are needed in order to develop a tire with minimum rolling resistance. Tires with reduced rolling resistance will have major benefits for the nation due to the associated savings in energy and oil consumption. The Transportation Research Board estimated that a reduction of 50 percent in rolling resistance would save 10 billion gallons of fuel each year.

#### *Lockheed Martin/SNL*

The Shared Vision strategic partnership between Sandia and Lockheed Martin has contributed to many mutual R&D initiatives. One is an award-winning chemical process that has created new, more affordable commercial applications of nanomaterial and optical coatings. The technique, Multifunctional Optical Coatings by Rapid Self-Assembly, is the most recent Shared Vision research initiative to win an R&D 100 Award. Refined by researchers at Sandia, Lockheed Martin and the University of New Mexico, this process creates film-like coatings by dispersing commercially available polymers in common solvents. The coating is applied with spin, dip or spray techniques compatible with current commercial methods. As the solvents evaporate, the polymers self-assemble into multifunctional nanoparticles, as well as films with tailored optical properties and a nanostructured surface.

In addition to indentifying a broader set of affordable industry applications for optical coatings, this research has developed uses of the technique for the Department of Defense, the DOE, and the National Aeronautics and Space Administration (NASA).

Under the partnership, Lockheed Martin has made a substantial investment to support Sandia-led technology research initiatives for projects important to SNL's core national missions. The coatings process is just one of many partnership projects which include fiber-optic signal and data transmission to aircraft, cyber defense, and several biological and chemical applications.

### **International Partnerships**

Under Deborah Payne's leadership, SNL's International Partnerships with industrial partners have taken on a new urgency and importance. While it is more difficult to work with the language and legal issues of other countries, it is imperative to work with foreign entities on technology transfer in order to increase national and global security.

Based on SNL's mission needs, Payne and her staff have focused in recent years on constructive engagement with international partners in order to reach closure on CRADA and Work for Other agreements beneficial to both partners. By making International Partnerships a higher priority and increasing communications efforts while remaining cognizant of DOE requirements governing interactions with foreign entities, SNL has increased its mission critical International Partnerships

Payne and her team have had a number of successes. These include work done by SNL with the U.S. Environmental Protection Agency (EPA) and the National Water Authority of Singapore, as well as several domestic municipalities as part of the EPA Water Security Initiative. CANARY, event detection software technology developed by SNL and the EPA as part of this partnership, received an R&D 100 Award.

### **Streamlining Technology Transfer through Leadership**

Deborah Payne has contributed to many DOE/NNSA Laboratories' initiatives to review existing policies, benchmark best practices, and recommend improvements and streamlining of processes. She led the initiative by the Technology Transfer Working Group to identify a suite of recommended changes and alternatives to DOE/NNSA's financial management requirements. The pros and cons for each were studied and the practices of other federal agencies were also scrutinized. One of the changes that has been implemented this year is that DOE modified their requirements for advance funding which resulted in a decrease in the amount of money non-federal entities are required to come up with upfront before work commences. This helps SNL customers, such as private businesses, more easily engage in partnerships with SNL.



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