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Title:

CRITICAL PARTNERSHIPS: LOS ALAMOS, UNIVERSITIES,
AND INDUSTRY

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NATIONAL LABORATORY



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1997 Workshop on Alternative Funding for Orthopaedic Research
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Title: Critical Partnerships: Los Alamos, Universities and Industry

Los Alamos National Laboratory, situated 35 miles northwest of Santa Fe, NM, is one of the Department of Energy's three Defense Programs laboratories. It encompasses 43 square miles, employees approximately 10,000 people, and has a budget of approximately \$1.1B in FY97. Los Alamos has a strong post-cold war mission, that of reducing the nuclear danger. But even with that key role in maintaining the nation's security, Los Alamos views partnerships with universities and industry as critical to its future well being. Why is that?

As the federal budget for R&D comes under continued scrutiny and certain reduction, we believe that the triad of science and technology contributors to the national system of R&D must rely on and leverage each others capabilities. For us this means that we will rely on these partners to help us in 5 key ways: We expect that partnerships will help us *maintain and enhance our core competencies*. In doing so, we will be able to *attract the best scientists and engineers*. To keep on the cutting edge of research and development, we have found that *partnerships maintain the excellence of staff through new and exciting challenges*. Additionally, we find that from our university and corporate partners we often *learn and incorporate "best practices"* in organizational management and operations. Finally, we believe that a strong national system of R&D will ensure and enhance our ability to *generate revenues*.

We believe that universities and industry play a complementary role in helping us achieve the goals of our national mission. For example, core competencies that are strategically required to meet our mission needs will largely continue to be supported directly at the Laboratory. However, when we feel we need a broader or enhanced understanding we will look to universities to supply that basic research component. Universities excel in basic research and we feel that they are the best providers in this area. At the other end of the spectrum, we often need partners who can take our technology through the product development cycle. We develop our technology to only a very early stage and usually for only specialized applications directly related to our mission. Here we seek industry partners who can take that technology and develop it to a greater level of maturity across multiple applications, both defense and commercial. By strategically defining our partnering needs we feel we use the best resources in the most efficient ways.

Programs where we have partnered with universities include the Advanced Strategic Computational Initiative, Global Climate Change Program, Human Genome Project, magnetoencephalography, environmental programs, and individual projects such as surface engineering, crash modeling, and telemedicine. Los Alamos hosts approximately 1600 post doc and graduate students annually. Finally, as part of the management contract between the University of California and DOE, UC sponsors a program that funds joint projects between Los Alamos and UC campuses.

We partner with industry in three key ways: through collaborative research, sponsored research, and Laboratory-based programs. In collaborative research the Laboratory and industry cost shares in-kind to perform work that is of mutual benefit to both parties. Examples of this are 3-D seismic modeling for the oil and gas industry; data mining and

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data embedding that have broad industry applications; and single molecule detection for the pharmaceutical industry.

Two examples of sponsored research, where industry funds the Laboratory directly to perform work at industry's direction are the use of resonant ultrasound spectroscopy to determine the presence of otherwise undetectable flaws in components or complex structures and the use of Light Induced Detection and Ranging (LIDAR) to detect and track pollutants in the atmosphere.

Finally, the Laboratory has several programs aimed at industry. Two examples here include the Computational Testbed for Industry, where industrial staff can apply the great computational capabilities of Los Alamos to solve problems pertinent to their needs; the Industrial Fellows Program that places senior Laboratory personnel on 1-2 year assignments with industry both to form long term relationships, but also to learn the "best practices" for incorporation into our culture.

In conclusion, at Los Alamos we believe that a national R&D coalition among federal laboratories, universities, and industry serves each of us to achieve a secure future. Each of us has a role to play, and we believe that partnering with universities and industry makes good business sense and is critical to meeting the needs of our mission goals. And, last, we are actively seeking partnerships with universities and industry.

1997 ORS Workshop

Alternative Funding for Research

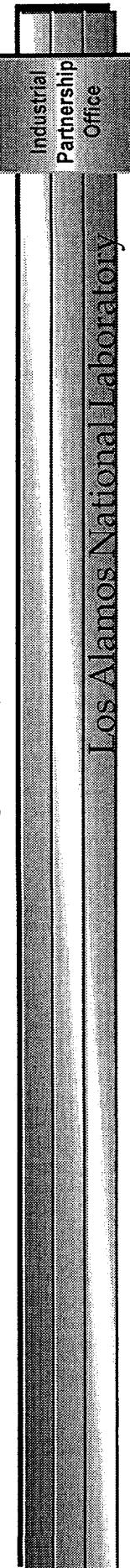
February 10, 1997

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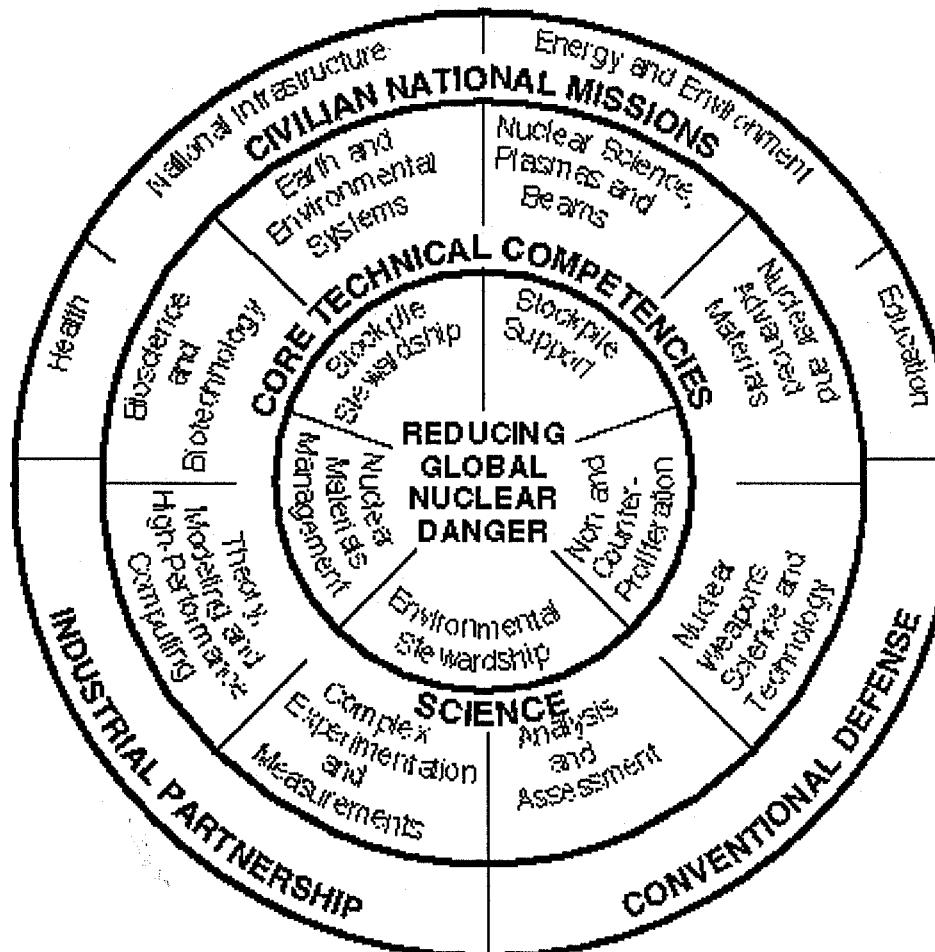
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The Laboratory's Central Mission is Reducing the Nuclear Danger

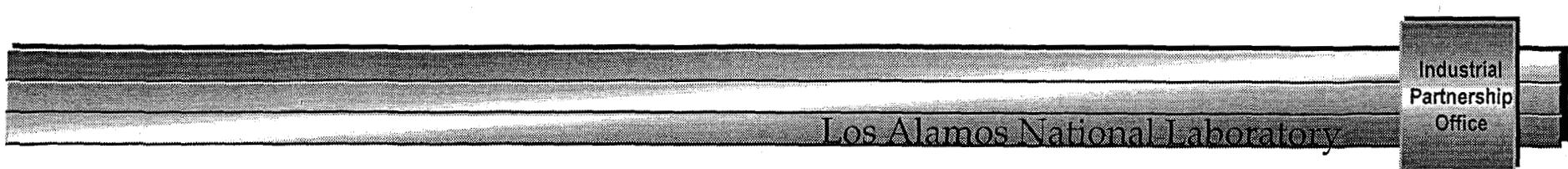
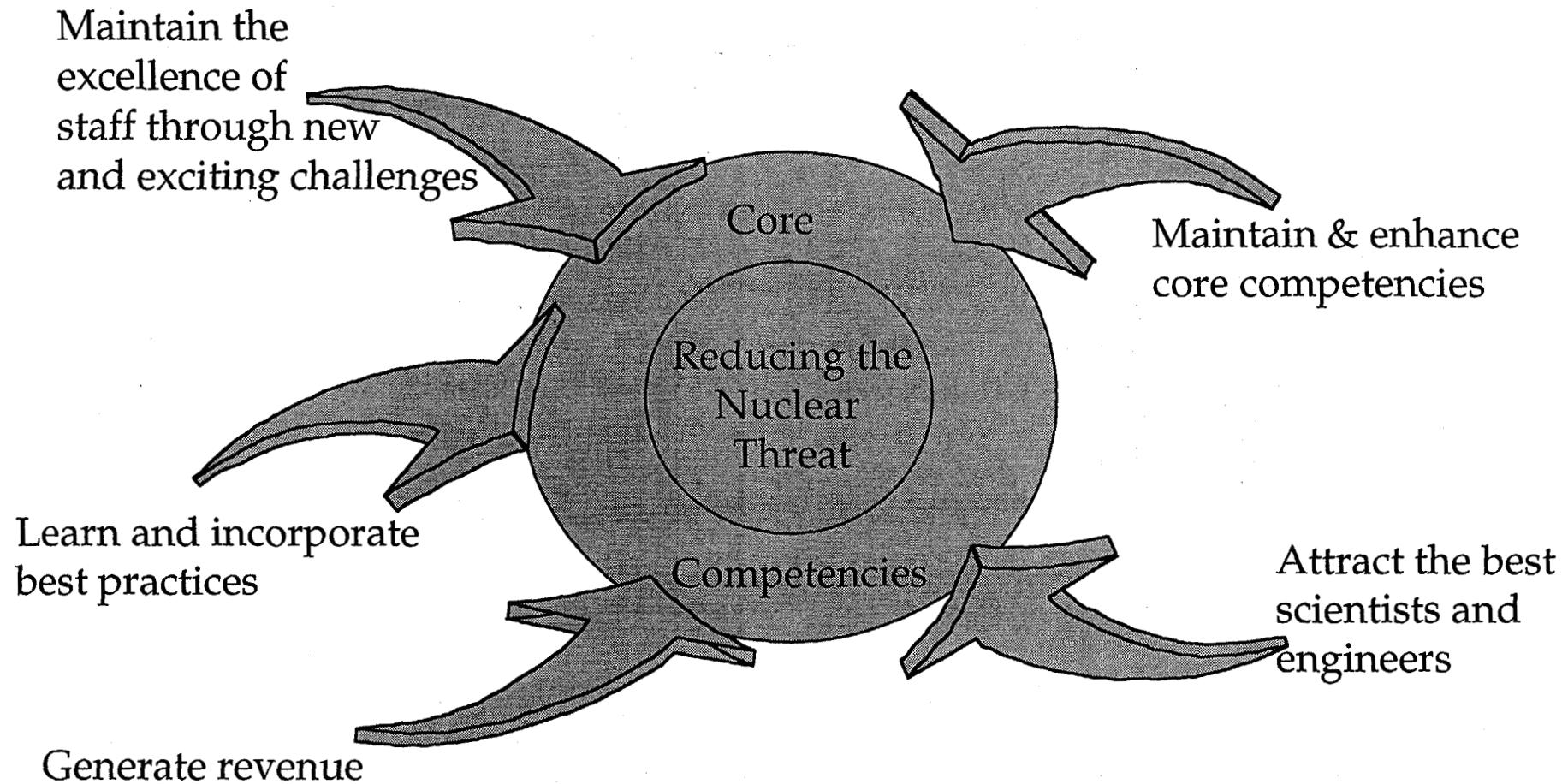


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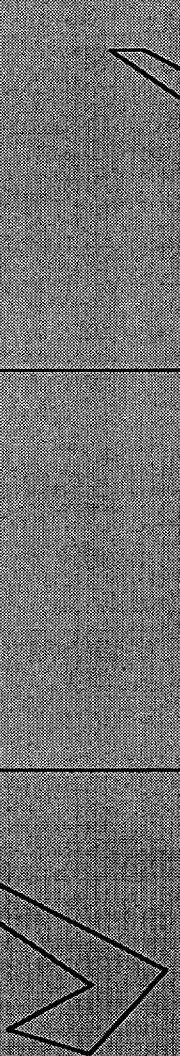
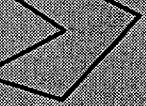
A brief word about Los Alamos National Laboratory...

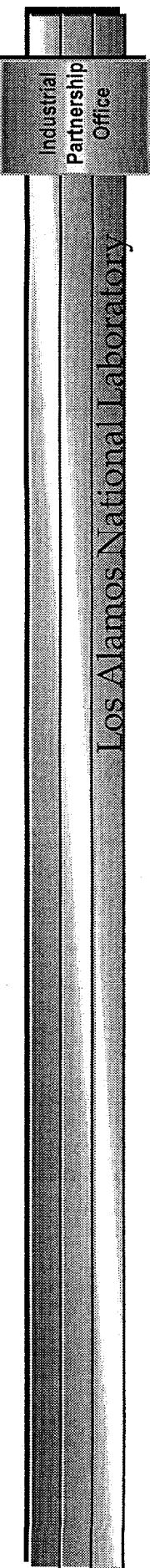
- Located in north central New Mexico
- 1 of 10 Dept. of Energy multiprogram laboratories
- 1 of 3 Defense Programs Laboratories
- 43 sq. miles
- 10,000 employees
- Operated by the University of California
- \$1.1 B annual budget

Why partner with universities and industries?



When do we partner?

Core Mission Need (Strategic Requirement)	Enhances Understanding (Basic Research)	Extends a Capability (Applied)
Los Alamos		
Industry		
University		



Where universities are partners...

- ▶ Advanced Strategic Computational Initiative
- ▶ Global Climate Change
- ▶ Human Genome Project
- ▶ Magnetoencephalography
- ▶ Waste management, Education Research Consortium
- ▶ Individual projects
 - ▶ Plasma source ion implantation
 - ▶ Crash modeling
 - ▶ Telemedicine
- ▶ Post doc and student programs: 1600 annually
- ▶ Visiting faculty
- ▶ UC Directed R&D

In Summary...

A national R&D coalition serves us all under future national budget scenarios.

Los Alamos views partnering with universities and industry as critical to our future.

We are actively seeking partnerships with universities and industry.