



SAND2007-7083C

Building Enduring Partnerships: Universities and Laboratories

DOE Day of Science
29 October 2007

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Albuquerque, New Mexico



Begin with a Partnerships Strategy

Our strategy is to establish enduring partnerships with a focused set of universities to nurture talent, collaborative research, and national advocacy.

*Recruit, retain
and develop
the best and
brightest*



*Build two-way
relationships
of mutual
benefit and
advocacy*

*Conduct collaborative
world-class R&D to
support mission needs*

Corporate investments in research, recruiting, and education are aligned with the focused set of partner universities.



Establish criteria to guide your choice of partners

Academic Quality – Nationally recognized rankings by discipline relevant to Sandia; competitive awards; publications.



Research Investment – Dollar amount of Sandia research contracts, FY03-FY05 inclusive.



Talent Capture – Number of hires (FY03-FY05) in top hire fields.



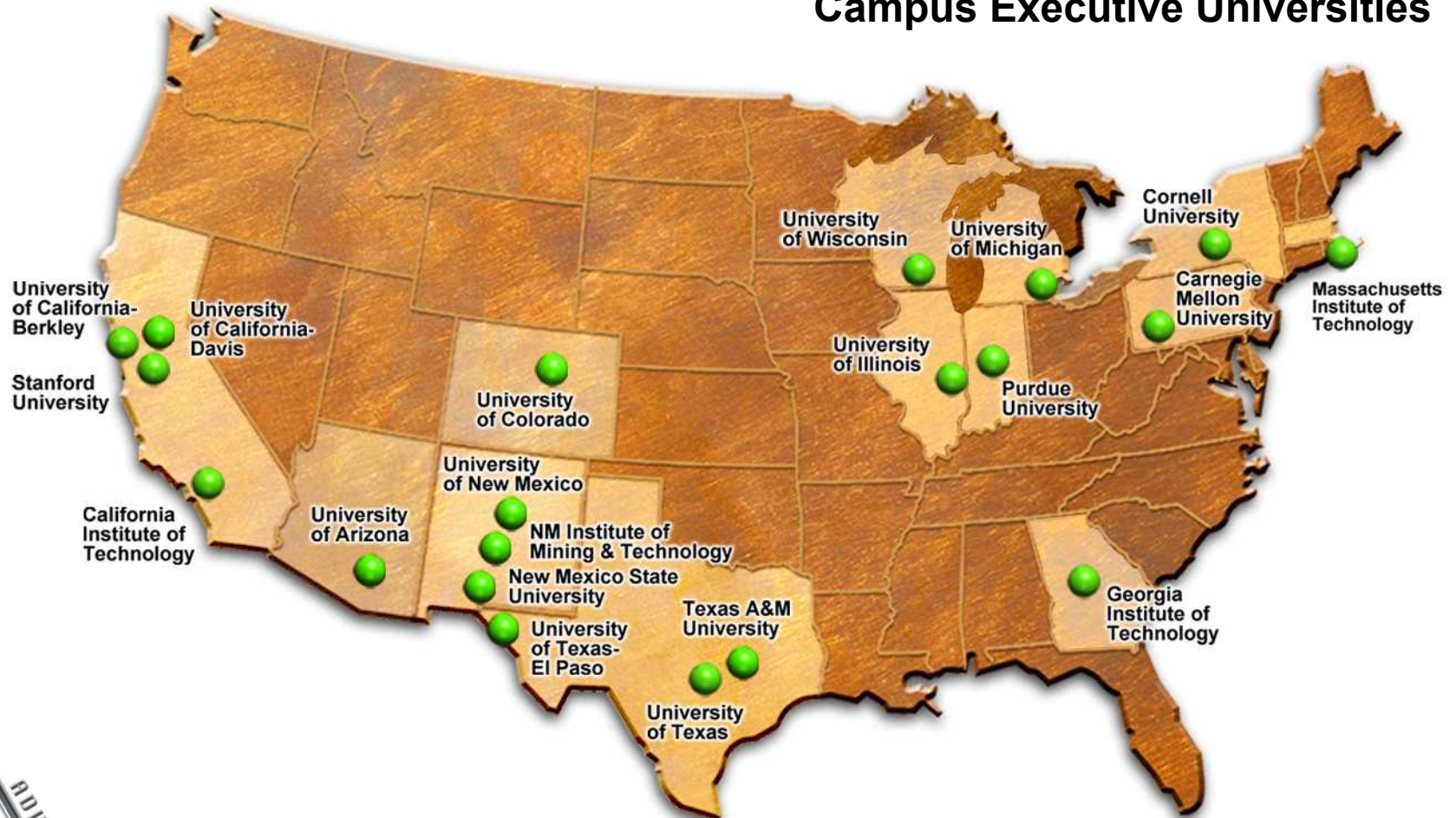
Diversity – Number of degrees awarded to members of under-represented groups.





Look at the whole picture

Campus Executive Universities



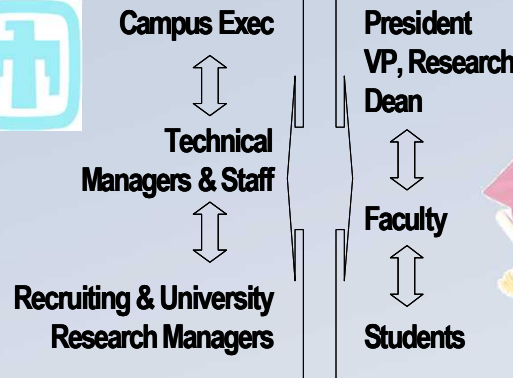


Develop an action plan for each partnership



The Campus Executive is responsible to:

- Consider the interdependency of all three areas and align when making decisions about talent, research, and building partnerships.
- Nurture a forward-looking theme area in collaboration with each school.
- Encourage and offer incentives for activities with the partner university.
- Implement a tailored approach based on the specific needs of Sandia and the partner university.



Relationship-building across multiple levels in both institutions is critical to success in building the partnership.

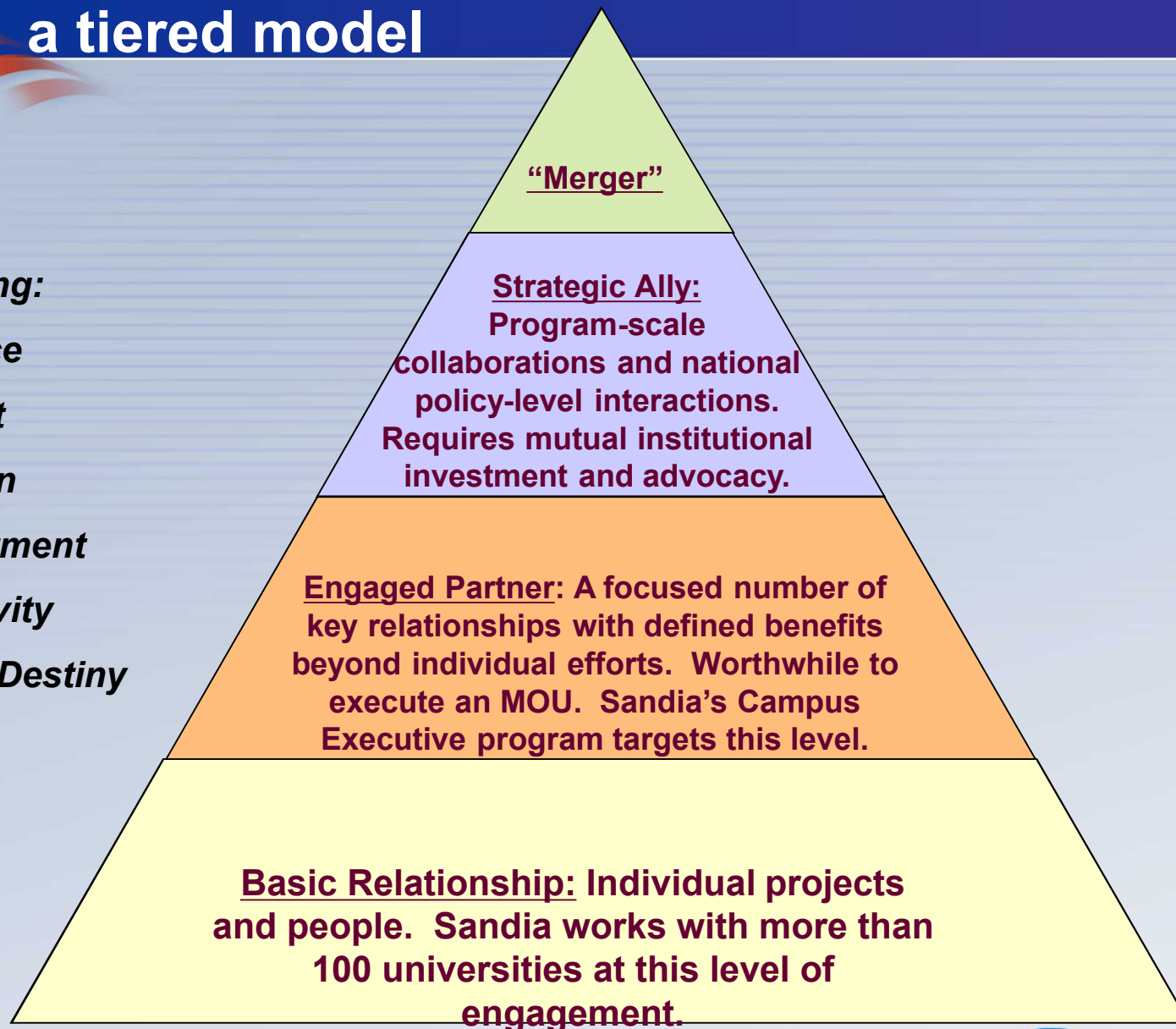


Strength of partnerships may be depicted in a tiered model



Increasing:

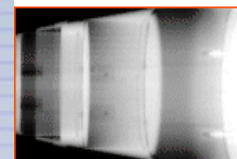
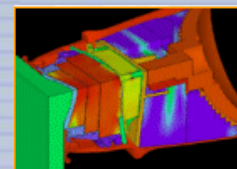
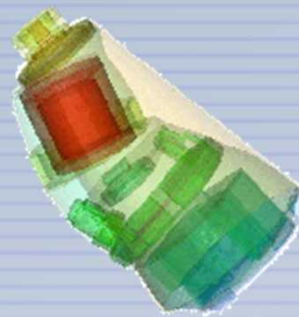
- **Influence**
- **Skill Set**
- **Intention**
- **Commitment**
- **Exclusivity**
- **Shared Destiny**





Partnerships are built upon interactions: Faculty

- Collaborative research
 - ~ \$30M annually
 - Mission related
- Sabbaticals and summer research appointments
 - ~ 20 appointments annually
 - 4 weeks to full year
- **PECASE** (President's Early Career Award for Scientists & Engineers)
 - \$250K award
 - New faculty with prior lab relationship
 - Currently 6 awardees





Partnerships are built upon interactions: Students

– Graduate Fellowships

- ~ 80 annually: OYOC, SMP, DSP, GEM, NPSC, LDRD

– Internships & Co-ops

- ~ 800 technical interns annually
- Year-round (semester/quarter) or summer
- Annual Symposium
- Critical Skills Institutes (next slide)



– Post Doctoral appointments

- ~ 140 on role
- 1-3 year appointments
- 2-3 Truman Fellows annually





Critical Skills Development Program (NNSA/RTBF)

- **Four broad Institutes established in FY07**
 - Cyber Security
 - Extreme Environments
 - Enabling Predictive Simulation
 - Nuclear Weapon Surety
- **Engages both Sandia's CA and NM sites**
- **Minimum line match = 1:1**
- **67 students from ~35 universities**
- **Average GPA = 3.8**

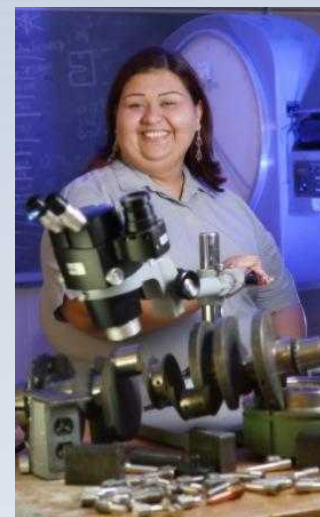




A Success Story

Claudia Arias

- **Attending Rice University on Fellowship**
(Fall 2007 - Ph.D. Program in Mechanical Engineering and Materials Science)
- **Sandia Senior Capstone projects at UTEP**
 - “Validation and verification study of a bolted lap joint: quasi-static analysis” 2004-2005
 - “Validation and verification study of a bolted structure: modal analysis” 2005-2006
- **Internships at Sandia National Laboratories**
 - Running models on massive parallel supercomputing platforms
(Summers 2006 & 2007)





We are conducting a Senior Capstone Project with Howard University

- Academic Years 2006-2008
- Prof. Emmanuel Glakpe, Howard Mechanical Engineering Department
- Tim O'Hern, Sandia Engineering Sciences Center
- Project Goal: Fully characterize the shape, concentration, and velocity of a falling particle curtain, perform multiphase computational fluid dynamics simulations of such flows, and compare the results.
- Project team meets weekly by videoconference/teleconference





Develop a model and the tools to support it

- Graduate Fellowships
- Internships and Co-ops
 - Critical Skills Institutes
- Post Doctoral Appointments
- Informing national policy
- Building relationships at multiple levels
- Leadership Outreach Committees



- Collaborative Research
- Sabbaticals and Summer Appointments
- PECASE
- Capstone Projects



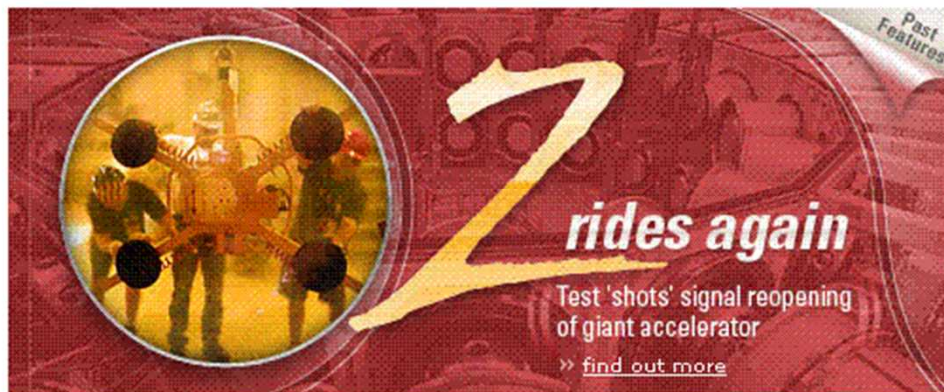
Education programs will go live on Sandia's homepage (www.sandia.gov) this week



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SECURING A PEACEFUL AND FREE WORLD THROUGH TECHNOLOGY



NEWS RELEASES



Hydrogen sensor has broad appeal



MicroFab certified green



Secret lives of two elements

SANDIA'S NATIONAL SECURITY MISSIONS



Nuclear Weapons
Ensure a safe, secure, & reliable nuclear deterrent.



Energy & Infrastructure Assurance
Ensure clean, abundant, & affordable energy and water.



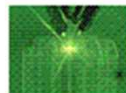
Nonproliferation
Reduce proliferation of weapons of mass destruction & threat of accidents.



Defense Systems & Assessments
Help maintain U.S. military weapon-systems superiority.



Homeland Security
Help protect our nation against terrorism through advanced technology.



Science, Technology, & Engineering
Conduct R&D programs to support all national security missions.

RESOURCES FOR...

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News Media

Partners & Collaborators

Students

Suppliers

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