

# Quality Management Conference 3/1/07

## MENTORING FROM PIPELINE TO THE BOTTOMLINE FOR YOUR ORGANIZATION



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# OVERVIEW

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- Introduce Sandia National Laboratories
- Purpose for today...
- What is a STAR for our company?
- The planning and selection process
- Building a future for math & science
- By the numbers...
- Lessons learned
- Wrap-up



# ABOUT SANDIA

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- Z Division created in 1945, then renamed to Sandia Laboratory in 1948
- In 1949, President Harry Truman letter to AT&T to manage Sandia
- First became National Laboratory in 1979
- About 8,000 employees





# PURPOSE for TODAY

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- **It's all about building the pipeline**
- **Provide template for you**
- **Ideal Mentors**
- **Share lessons learned**



*“Summer internships and research opportunities provide especially valuable laboratory experience for both mid-school and high school students”*

*- Rising Above the Gathering Storm (2005)*



# WHAT IS A STAR?

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- Highly motivated and performing high school students
- To work with world class engineers and scientists in a research based summer program
- Gain work experience in technology at one of nation's premier laboratories





# TO PROMOTE TECHNOLOGY!

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- Economic studies have shown that nearly 85% of measured growth in U.S. income has been due to innovative technological change (NAS).



*Technology: The practical application of knowledge especially in a particular area (e.g. engineering, medicine)*

*- Merriam Webster*



# AN EFFECTIVE MENTOR?

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- One of the greatest joys is to have a student succeed and eventually become a friend and colleague.
- High caliber students can better help produce high quality research, papers, and grant proposals.
- The results of mentoring is your LEGACY.

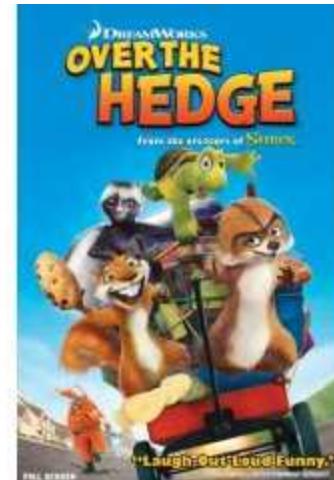




# WHAT IS THE BEST WAY TO CONNECT?

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- Be committed
- Establish protected time \*
- Provide introductions
- Build a sense of community \*
- Provide focused seminars
- LISTEN patiently...





## A TRUE MENTOR

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*“They are good listeners, observers, and problem-solvers. In the end, they establish an environment in which the student’s accomplishment is limited only by the extent of their talent.”*

*- National Academy of Science*



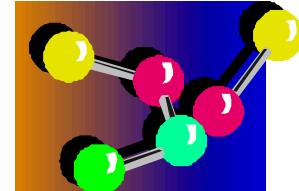
## TYPES OF RESEARCH

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- **Meaningful (Not busywork!)**
- **Productive**
- **Appropriate match with skills**
- **Current science and technology**

*“The proof that you know something is that  
you are able to teach it.”*

*- Aristotle*



## SAMPLE RESEARCH

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- Ion Transport Through Sulfonated Membranes
- The Effect of pH on the Doubling Time of *Pseudomonas fluorescens* Bacteria
- Mini Retro Commissioning of Six Institutional Plant Project Buildings
- Synthesis and Characterization of Novel Gallium Alkoxides and Nanoparticles for Use in Photovoltaics



# MEANS OF COMMUNICATION

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- Establish Email distribution list
- Maintain regular exchange of information \*
- Be proactive!
- Regular newsletters
- Site tours \*
- Give aways
- Celebration gatherings





## BY THE NUMBERS...

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**8,000** Approximate employees for Sandia Corporation

**3,840** Hours technical work by STAR students

**40** Workdays completed for each summer

**20** Isotopes baseball evening game tickets

**12** Technical presentations completed

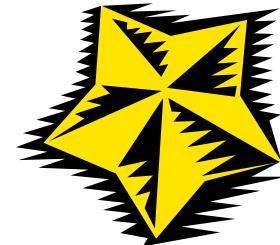
**9** Team celebrations for progress

**5** years running the program

**53** Successful STAR's

**25** Stay at SNL!





## PERFORMANCE RESULTS

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- ✓ Earned a 2005 AMIGO Award from Sandia National Laboratories
- ✓ January 2006 noted for strong program by the NM Senate Education Committee
- ✓ March 2006 received Nomination for ERA for the Sandia Mentor Team
- ✓ July 2006 received recognition for students from one of their U.S. Senators



## CUSTOMER SURVEY DATA

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- Overall Experience and Value? Score: 5
- Would highly recommend? Score: 4.8
- Do you plan for a college program in a technical field?
- Result: 100% replied YES





## KEY LESSONS LEARNED

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- Provide necessary training quickly \*
- Do not create undue burden to the research and development activities of your organization
- CHALLENGE interns to provide feedback
- Watch for students who are struggling, and
- Just because you sent one email, doesn't mean they "got the message"



## WRAP-UP

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- It's all about the PIPELINE!
- Knowledgeable mentors raise the performance for both students and the company
- Our Quality journey continues for the continuous improvement of the STAR intern program
- If you can imagine an activity, you can make it REAL for your students



# MUCHISIMOS GRACIAS!

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- THANK YOU for your participation
- Questions?
- Best of luck on your program!





# PROJECT MANAGEMENT

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STAR Selection Schedule		
Milestone	Task	Target date
1	Send out request for STAR applicants to Albuquerque area Public High Schools	January 15
2	Begin discussions with Sandia mentors to see who has research opportunities and available work space  Finalists for STAR are selected	February 28
3	Students are notified of acceptance	March 30
4	Meetings held with Sandia mentors to finalize the areas of research that would best fit the students skills and interests	April 30
5	Student and family welcome party STAR students begin work	May 20 First week of June