

# National Defense Education Program K-12 Pre-Engineering Program

*Kim Day*

*Director, NDEP K-12 Programs*

**ASEE 7th Annual Workshop**

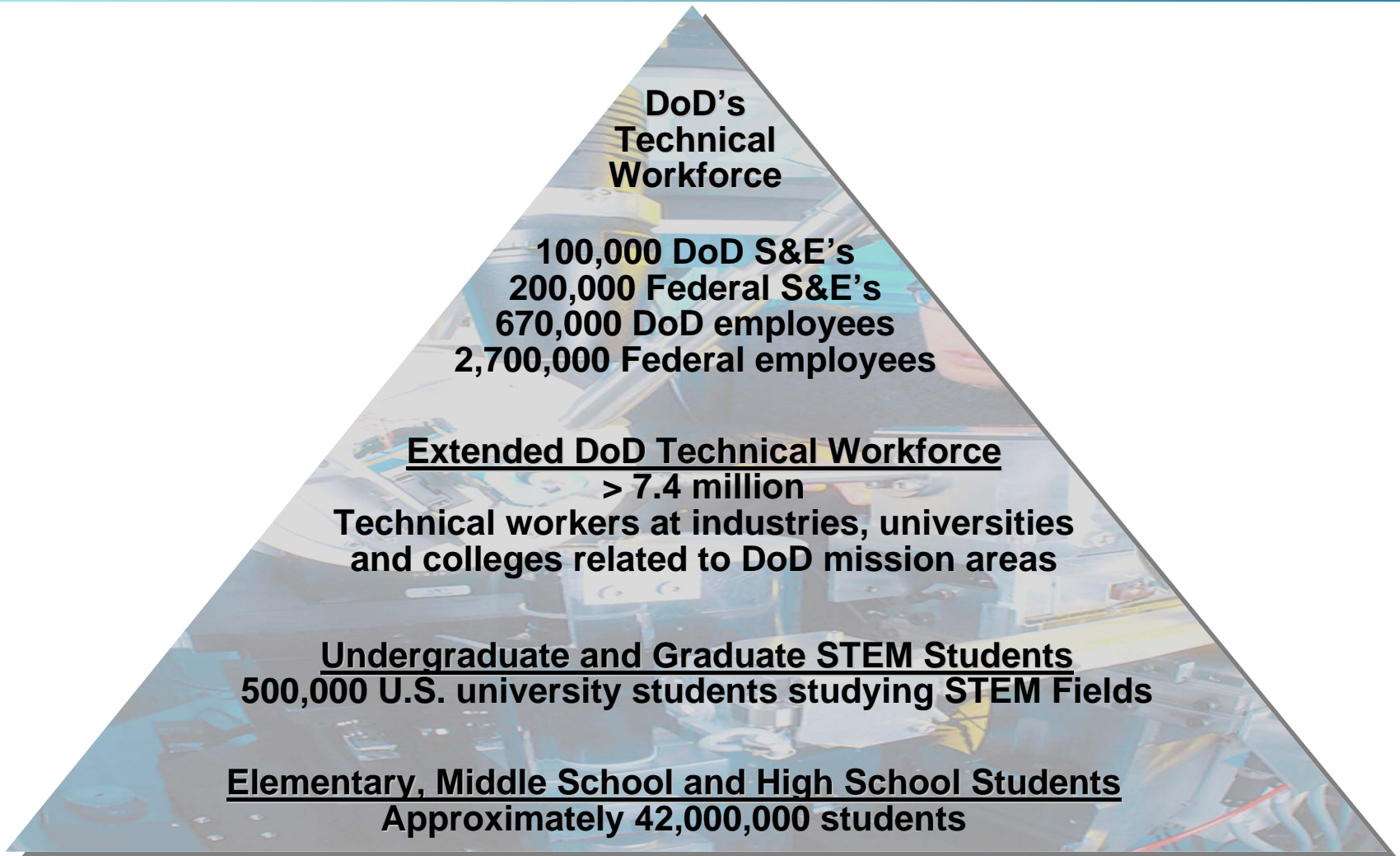
**K-12 Workshop Program**

*Louisville, Kentucky / 19 June 2010*

"So I want to persuade you to spend time in the classroom, talking – and showing - young people what it is that your work can mean, and what it means to you... Think about new and creative ways to engage young people in science and engineering, like science festivals, robotics competitions, and fairs that encourage young people to create, build, and invent – to be makers of things."

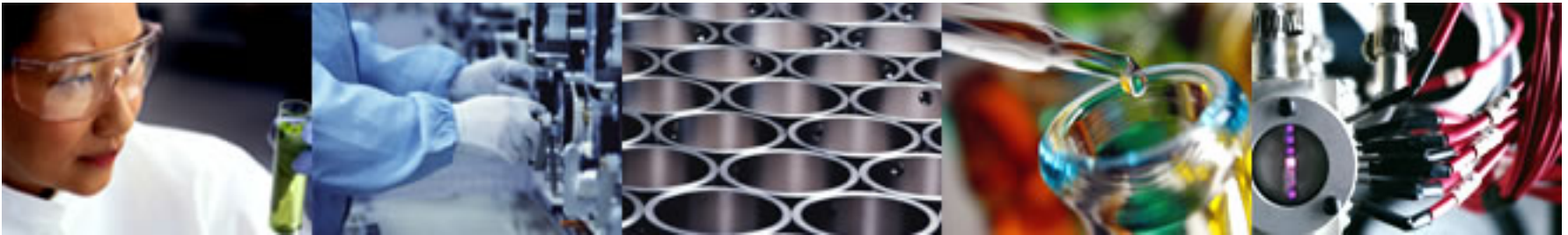
*President Barack Obama to the National Academies of  
Science and Engineering, 27 April 2009*

# Why DoD Cares



*The Department of Defense employs nearly half of all Federal physical scientists, technologists, engineers, and mathematicians*

# *Defense Department Interest in STEM Education*



## What we are doing

- Stimulating and encouraging student interest in STEM fields
- Establishing teacher-scientist/engineer partnerships for STEM
- Providing professional development training to teachers
- Mentoring students, providing career and technical expertise guidance
- Exploring long-term STEM education and outreach commitments
- Establishing Department-wide policies / resources for STEM education
- Promoting STEM education integration across the federal government

## What we are not doing:

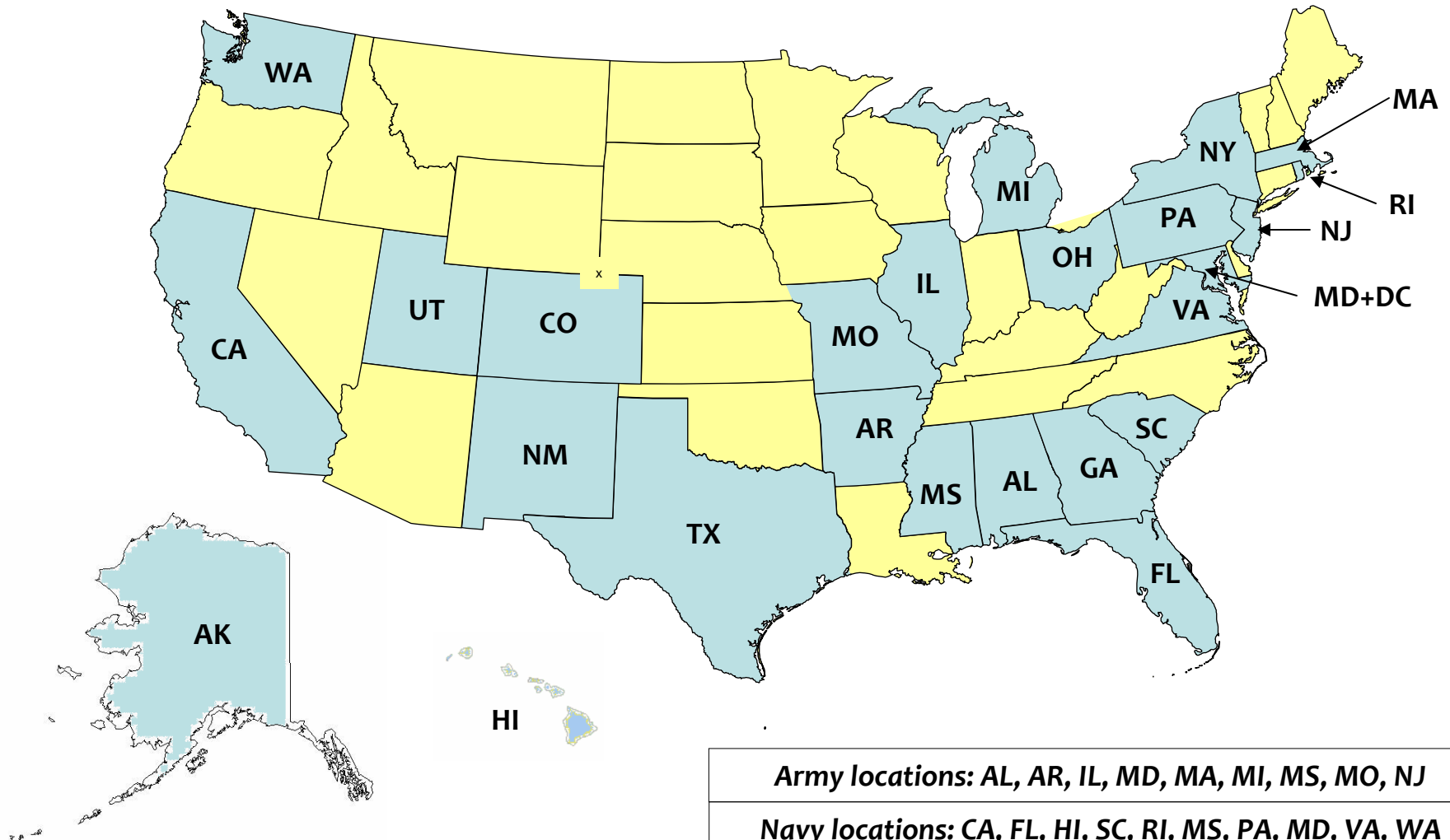
- Recruiting for DoD military (or civilian) service
- Taking over the classroom
- Dictating STEM curricula to participating communities

## NDEP Programs (K-12)

- Local partnerships
  - Collaboration with schools near DoD research laboratories, engineering centers and bases
  - Providing STEM support to teachers
    - LabTV makes STEM career options “come to life”
    - Summer Institute Teacher Training Workshops
    - Local community STEM Learning Module training workshops
    - NDEP website portal with local emphasis for resource sharing
  - Student mentoring

*Community partnerships between teachers and defense scientists and engineers.  
Hands-on classroom activities – where the students are!*

# NDEP K-12 Program States

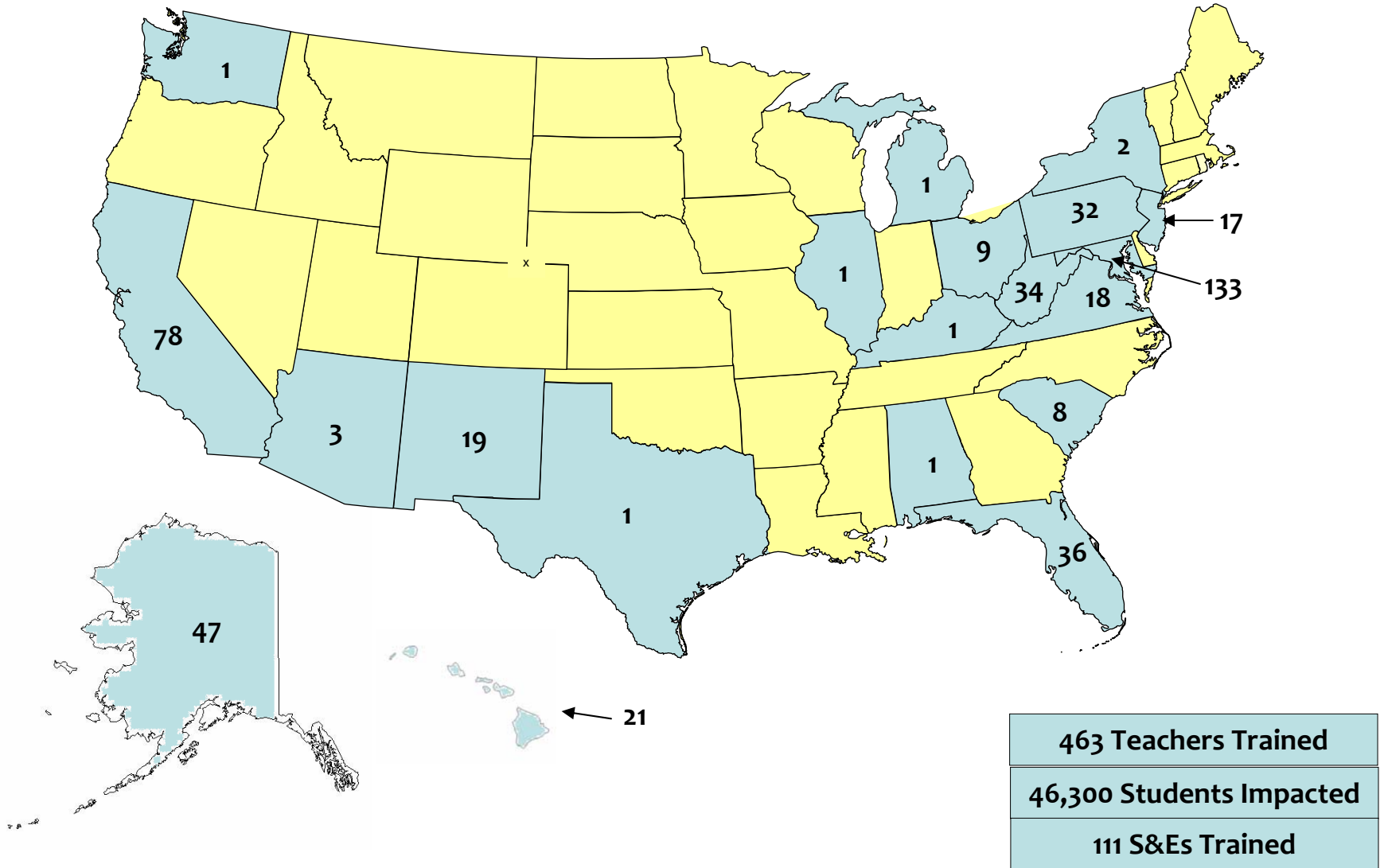


**Army locations:** AL, AR, IL, MD, MA, MI, MS, MO, NJ

**Navy locations:** CA, FL, HI, SC, RI, MS, PA, MD, VA, WA

**Air Force locations:** AK, CO, FL, GA, NM, NY, OH, TX, UT

# SLM Teachers Trained



## Pre-Engineering Program (K-12)

- National partnerships
  - Museum of Science, Boston
  - US FIRST Robotics
  - MATHCOUNTS
  - Center for Excellent in Education
  - Professional Societies
    - American Society of Engineering Education (ASEE)
  - Federal Agencies
    - Dept Ed, NSF, DoE, NOAA, NASA, etc
  - Industry

*Leveraging stakeholder agencies and organizations for high quality STEM educational content, outreach opportunities and human capital expertise.*



The screenshot shows the NDEP website homepage with a dark navigation bar at the top containing links: HOME, GET INVOLVED, PROGRAMS, PERSONAL STORIES, LAB TV, LABS, COMMUNITIES, FAQs, and ABOUT US. Below the navigation is a blue banner with the NDEP logo and the text "Building American Strength in Science and Engineering".

The main content area is divided into several sections:

- PERSONAL STORIES**: A large image of a smiling woman with a text overlay: "HOT TECHNOLOGY How an Air Force engineer got to specialize in non-lethal heat rays. [READ NOW >](#)"
- LAB TV**: A video thumbnail titled "IT'S A BLAST! Teenage Rocket Scientists" with a "WATCH NOW >" button.
- READ MORE PERSONAL STORIES**: A row of five numbered buttons (1-5).
- GET INVOLVED**: A vertical sidebar with three categories: "Scientists & Engineers" (with a microscope icon), "Students" (with a book icon), and "Teachers" (with an apple icon).
- The BIG Picture**: A central text block stating: "The National Defense Education Program (NDEP) invests in science, engineering and math education from middle and high school through college and post graduation. NDEP's mission is to support a new generation of scientists and engineers who will apply their talents in our nation's defense laboratories. [READ MORE >](#)"
- PROGRAMS**: A thumbnail image of a student looking through a telescope.
- COMMUNITIES**: A thumbnail image of a group of students sitting on bleachers with the text: "NDEP connects educators with science and engineering partners."

NDEP website = <http://www.ndep.us>

## Summary:

- National Partnerships
  - US FIRST, MATHCOUNTS Club Teams
  - Museum of Science (Boston)
  - Professional Society's
    - ASEE, etc
- Local Partnerships
  - Support Teacher – S&E professional development training
    - CASE Summer Institute workshops (July)
    - Professional development training workshops (in local communities)
    - Lab visits, guest lecturers, etc
  - STEM Learning tools
    - MWM, Tabula Digita, Calc Robot, Sea Perch, etc.
  - Community information and needs
    - “Bubble Charts” show community footprint
    - Quad charts of local K-12 education and outreach activity
- Communication
  - NDEP website
    - Nation-wide STEM collaboration portal
      - STEM content, material sharing
      - K-12 home pages for participating sites
    - Expanded LabTV topics, LabTV supplemental material
    - Public service messages (NCIS)

## Highlights:

- Lab/School District partnership in (23+ states)
  - More than 463 teachers, 111 Defense S&E trained, 380+ Defense S&E participants
  - Approx 215 schools and 46,300 students
- Support MATHCOUNTS Club Program 7,500 kits
- Sponsor students at CEE Summer Research Institute at MIT
- Support STEM module development and conduct professional development training
  - Four 1-Week Summer Teacher Training Institutes in McHenry, MD
  - Multiple SLM professional development training workshops conducted in Defense communities
  - Training to enhance Teacher/S&E partnership
  - “Tabula Digita” for MS mathematics
  - Calculator Robot module for MS mathematics
- Support school district need for training and inquiry-based tools
- NDEP website ([www.ndep.us](http://www.ndep.us)); developed defense laboratory-based high impact video's (LabTV) to promote STEM career opportunities.
  - LabTV
  - K-12 home page for participating sites

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