



Professional Science Masters Program: DoD Needs

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DoD S&E Workforce Concerns



- DoD employs 43% of Federal S&Es (~ 10 K MSs)
- Projections show that DoD will need to hire about 15,000 S&Es over the next decade and that the problem will worsen in the 2015-2025 time frame without present day intervention.
- Growing evidence that the production of scientists and engineers (S&E) available to work on DoD Science & Technology problems is not adequate
- Trends from industry, the Bureau of Labor Statistics and academia suggest supply of U.S. citizen in S&E won't met demand (up 16% by 2012)
- Current BLS projections show a rising demand for S&Es nationally while the supply in disciplines of particular interest to DoD is flat or diminishing

*If the US looses its Technology Advantage --
National and Economic Security is At Risk*

Increasing Demand, Decreasing Supply

World Technology Leadership

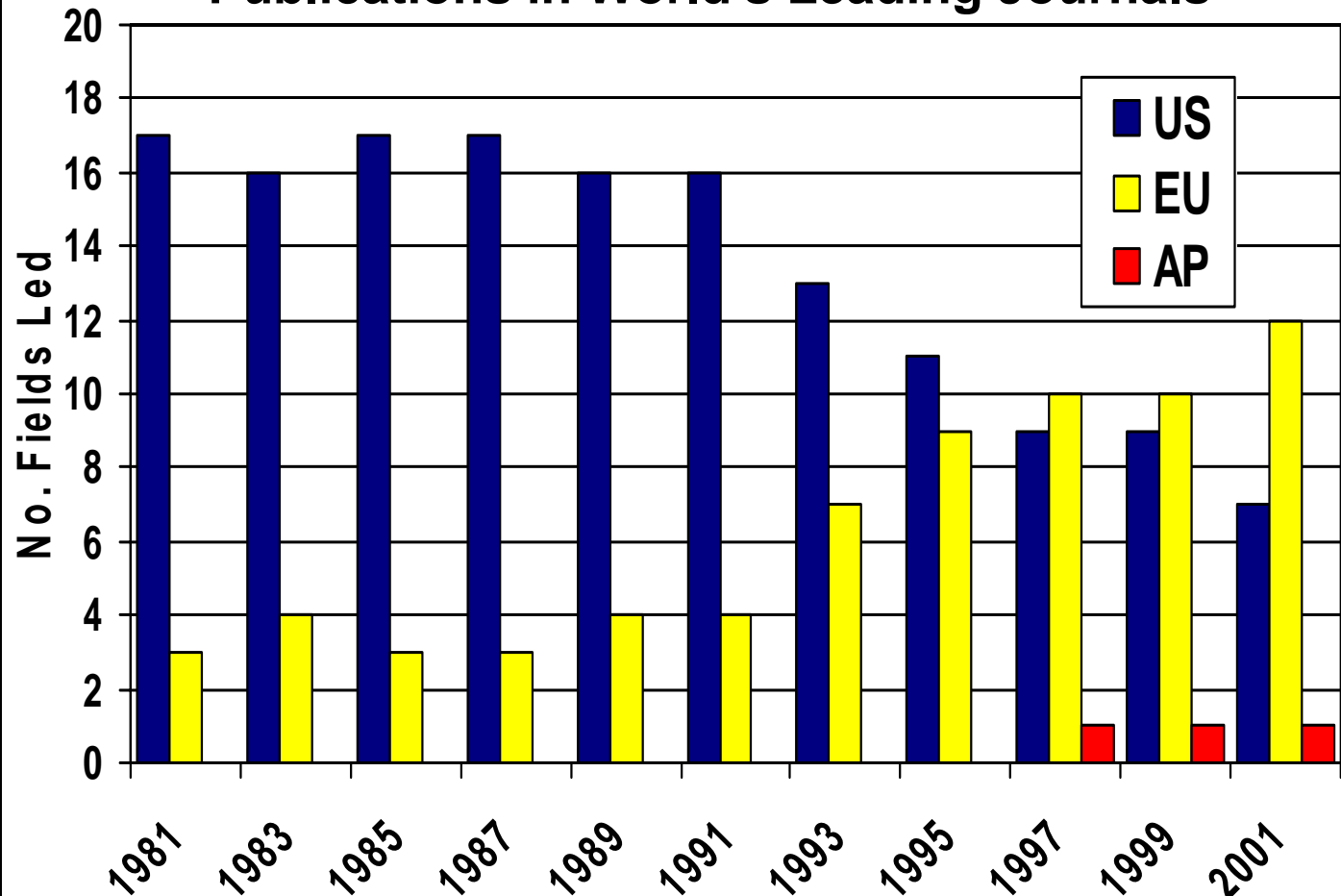


20 Technology Areas-

- Agricultural Science
- Biology & BioChem***
- Chemistry
- Clinical Medicine
- Computer Science***
- Ecology & Enviroment***
- Engineering
- Geoscience
- Immunology***
- Materials Science
- Math
- Microbiology
- Molecular Bio & Genetics***
- Multidisciplinary
- Neuroscience***
- Pharmacology
- Physics
- Plant & Animal Science
- Psych & Psychiatry***
- Space Science

(*Led by US in 2001)

Scientific Fields Led - Measured by Publications in World's Leading Journals



From: Shelton, Holdridge briefing; Data Source: Thomson Scientific, National Science Indicators, ISI 2002, Copyright retained

US= United States, EU= European Union, AP= Asia Pacific

The Real Problem Lies In Education



“Some college or advanced training will be needed for about 85% of new jobs. But only 60% of American Students get that far. **Businesses will need 2 million more Scientists and engineers by 2012** and 2.4 million workers with key Manufacturing and production skills. Current trends indicate **DEMAND WON’T BE MET.**”

Source: The Kiplinger Letter, Forecasts for Management Decisionmaking, Vol 82, No. 38, Sep 23, 2005

SMART 05



Science Mathematics and Research for Transformation (SMART)

Congressional Add in FY05 Authorization & Appropriation

- Undergraduate/Graduate Scholarship Pilot Program
- US Citizens only (legislative limitation)
- Disciplines deemed critical to national defense
- 2 yrs of support (max – effective limitation due to pilot status)
- Service Payback required
- \$ 2.5M

Implementation

- Internship required (outside of program)
- Mentorship required (outside of program)
- Post-degree work payback (set to 1-1 non-employee/3-1 employee)
- Participants: Army, Navy, Air Force, DARPA, DISA, DTRA

- 32 awards provided – students begin in Fall Semester, 2005

SMART/NDEA 06



Science Mathematics and Research for Transformation (SMART)/ National Defense Education Act (NDEA) 2006, Phase I

SMART/NDEA 06 amendment enables comprehensive approach to education and training – Shaped Workforce

- SMART 05 is a valuable foundation (PE, execution & pgm components)
- Permanent program vs pilot
- Provides both Academic and Non-Academic elements (within program)
- Employee status while enrolled sought
- Expansion of skill/discipline/degree sought (language/associates)
- Will drive greater awareness of S&T workforce needs & planning
- Designed for DoD-wide S&T workforce utility (widening interest/support)
- Planned level expected to meet 10% of anticipated needs over 10 years
- Increased funding sought

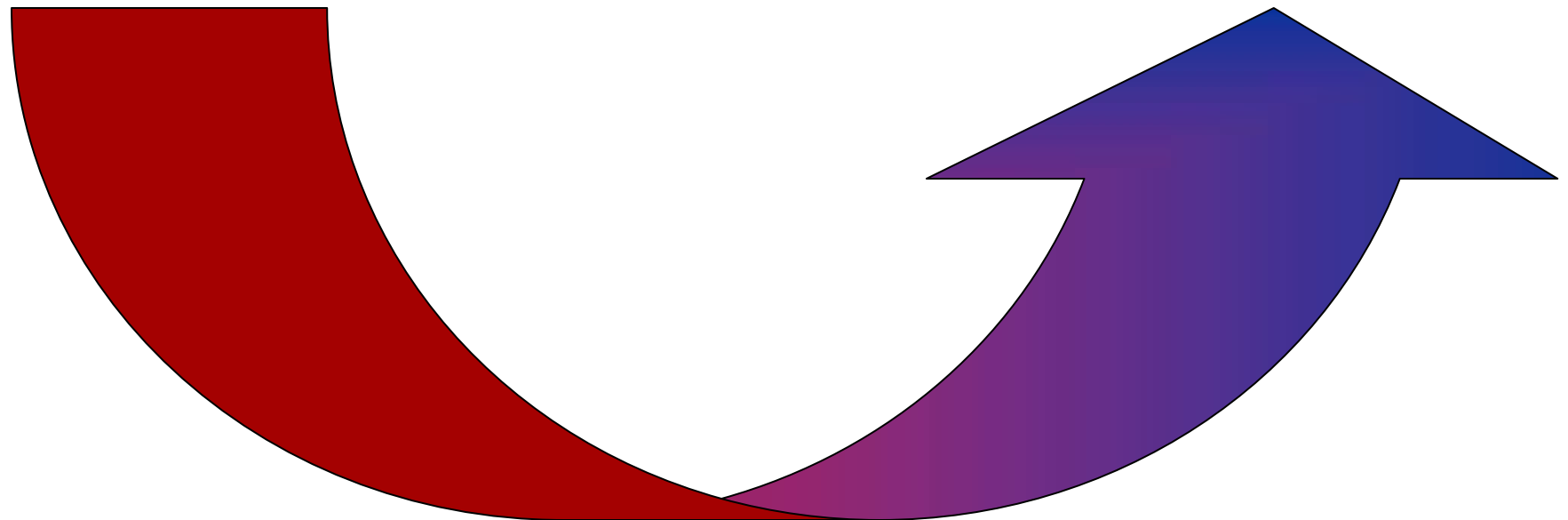
Key Issue for DoD: Technology Transition



The Valley of Death

Science

Product



Program Management Skills Needed



- Program Managers
 - Technology - moving scientific breakthroughs to technology
 - Acquisition – reducing time and cost while assuring technical superiority
 - Logistics – Efficient movement of materials and people
- S&E's with foreign language skills

Some Existing PSM Programs of Interest



- Analytical Chemistry
- Materials and Chemical Synthesis
- Health Physics
- Nanoscale Physics
- Mathematics
- Applied Mathematics
- Applies Statistics
- Human-Computer Interaction
- Applies Bioscience
 - Biomimetics Focus