



U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND ARMY RESEARCH LABORATORY

**A PARADIGM SHIFT FOR HOW DoD FUNDS PEOPLE TO
DRIVE INNOVATION THROUGH ENTREPRENEURIAL
SCIENCE**

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AUTHOR BIOGRAPHIES



- Dr. Pete Khooshabeh (DEVCOM ARL):
 - Expertise in cognitive science & Human Machine Integration (HMI)
- Dr. Aimee Rose (Activate Global):
 - Developed & commercialized materials for explosive detection out of MIT graduate research
 - Army's Greatest Invention Award
 - Founding CTO at Advanced Fabrics of America
- Dr. Thane Campbell (Deep Science Ventures)
 - Trains global moonshot founders
- Presented by Dr. Michael Bakas (DEVCOM ARL):
 - Expertise in extramural funding & material synthesis and processing



BACKGROUND ON DoD FUNDING BASIC SCIENCE



- DoD funds ~\$3B annually in basic science, generating high-impact innovations.
- Traditional academic paths lack training in technology transition and transfer (T3).
- US STEM PhD programs lack commercialization training.
- Industry prioritizes short-term returns; academia focuses on novelty.
- Legacy sectors resist innovation, creating barriers to market entry.
- Competitors like China and India integrate innovation into all sectors, including manufacturing.

INNOVATION INCENTIVE STRUCTURES



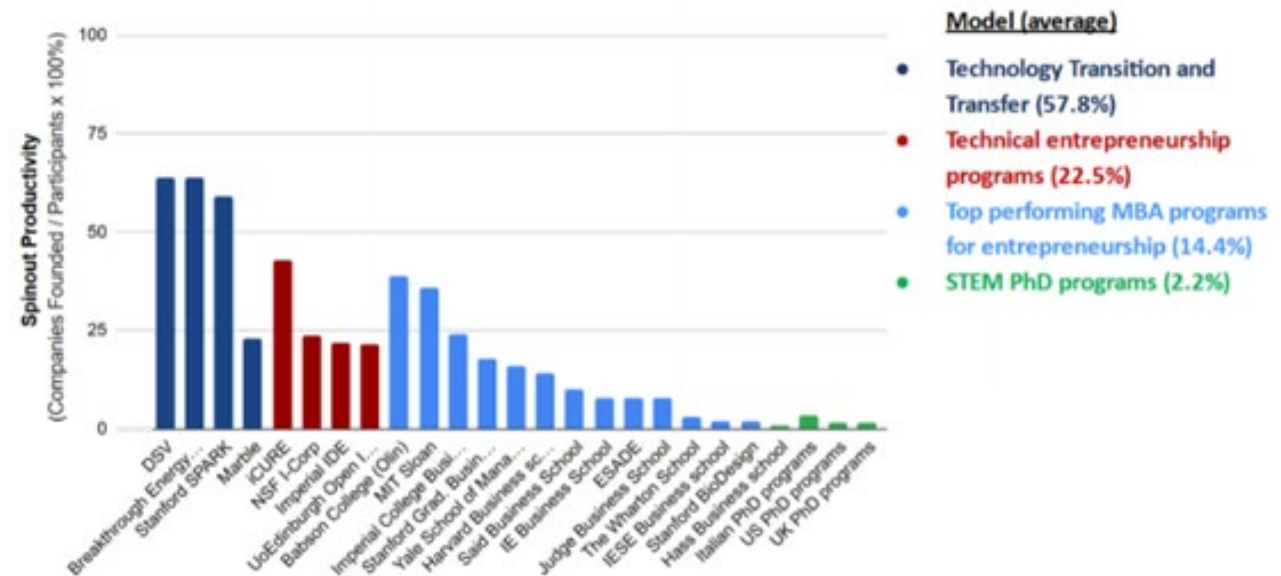
- Academia rewards novelty; industry rewards commercial utility.
- Misaligned incentives slow US innovation.
- Competitors leverage state-owned enterprises for strategic growth.
- Reshoring manufacturing alone is insufficient; inward investments are needed.

EXAMPLE SUCCESS OF ENTREPRENEURIAL SCIENCE



- Venture Science Doctorate (VSD):
- 3-year PhD focused on moonshots and industry creation.
- Recognized globally for workforce development, e.g., partnership with SPRIND, an ARPA type agency in Europe.
- Activate Entrepreneurial Research Fellowship (ERF):
- Supports scientists transitioning from lab to startup, usually as postdoctoral fellows
- Addresses unique risks in hardware-based businesses.
- Both models capture private capital to accelerate technology development

Productivity of Company Creation Programs



KEY COMPONENTS OF THE ACTIVATE ERF



- Non-dilutive funding and living stipend (~\$100K) for up to 2 years.
- Tailored entrepreneurial training and mentorship.
- Robust community, across several ERF cohorts, for rapid peer learning and support.
- Specializes in TRL 1-4.
- Concierge service.
- Zero Equity.
- Flexible milestone planning and broad industry networks.
- Focus on pivots and adaptability for commercialization success.

RESULTS AND RECOMMENDATIONS



- VSD: 50 companies in 8 years with \$500M valuation.
- Activate ERF: 197 companies created, \$4B raised, 2800+ jobs.
- 96% of Activate companies are still active.
- Implementation of venture-focused PhD programs can generate founders and dual-use technologies.
- Adapt existing degree funding programs for advanced synergistic technologies.
- Implementation of DoD-sponsored ERF postdoctoral fellowships, e.g., to NDSEG for elite grad students, to align talent and product development with military needs.
- Cohort-based model to shape early company trajectories.
- Enhance T3 through collaboration among defense, industry, academia, and private capital to catalyze a modern industrial base.

THANK YOU.

