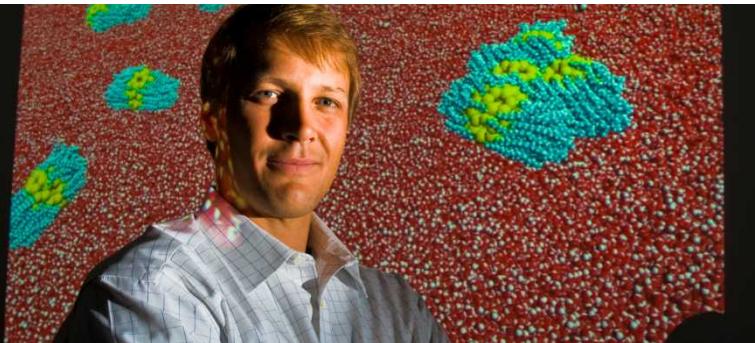


*Exceptional service in the national interest*



# Research at Sandia

Julia M. Phillips, Ph.D.  
Vice President and Chief Technology Officer

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000. SAND2013-XXXX

# A little about Sandia's Chief Technology Officer

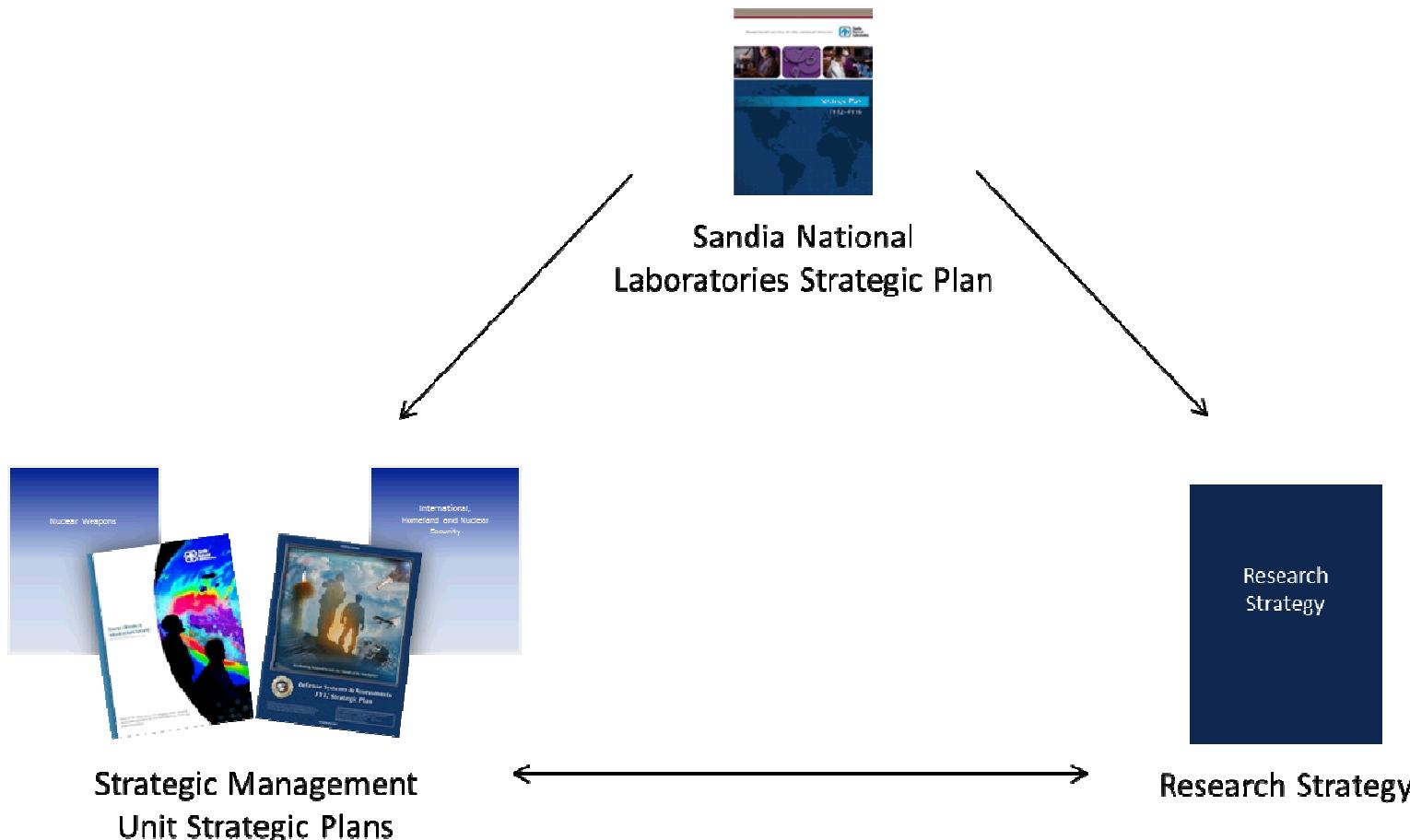
- My responsibilities include:
  - Science & Technology Research Strategy
  - Internally Funded R&D (Laboratory Directed Research and Development) Strategy and Management
  - Partnerships Strategy and Management



# Laboratory missions are built on a foundation of capabilities – research, people, and facilities & tools

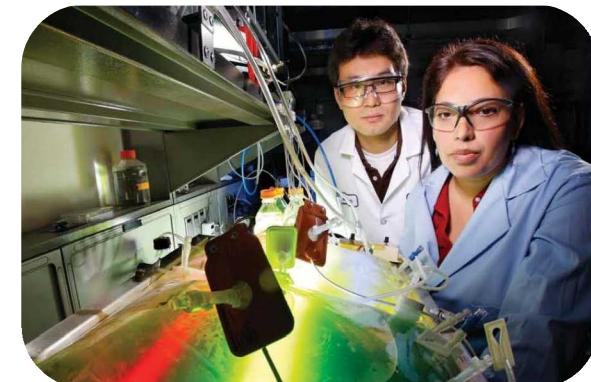
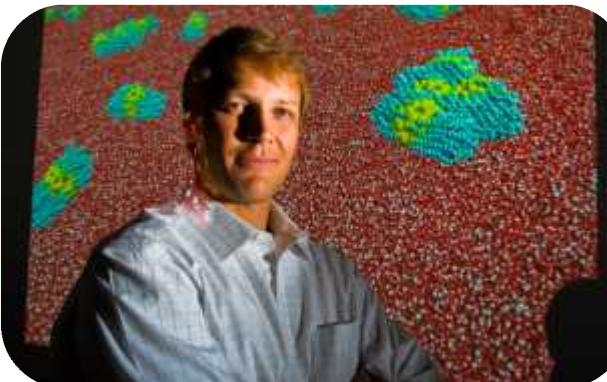


# Sandia's Research Strategy is part of the Laboratories' strategy



# Sandia's research objective

Research conducted at Sandia shall enable mission delivery now and in the future and advance the frontiers of science and engineering.



# Research strategy objective

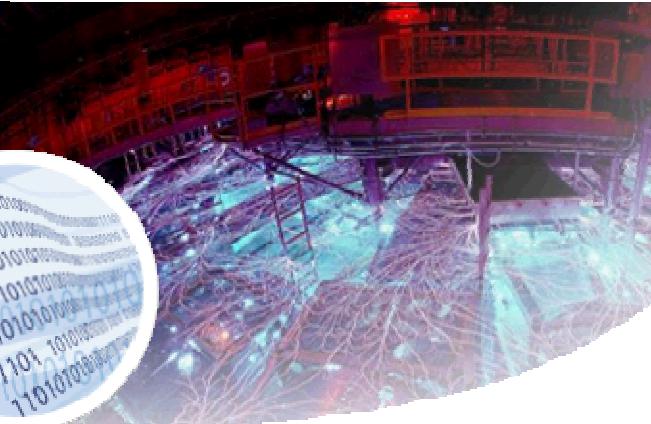
- A world-class research portfolio that:
  - provides critical differentiation in the delivery of mission commitments
  - tackles ground-breaking interdisciplinary research challenges that create transformational opportunities in national security
  - is nurtured by a vibrant, problem-rich research environment that is sustained as a fundamental element of the Laboratories' strategic plan

# Strong Research Foundations provide differentiation in mission delivery

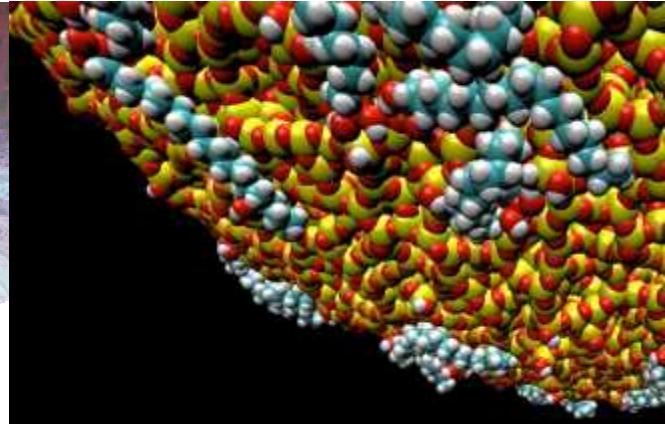
# Computing & Information Sciences



## Radiation Effects & High Energy Density Science

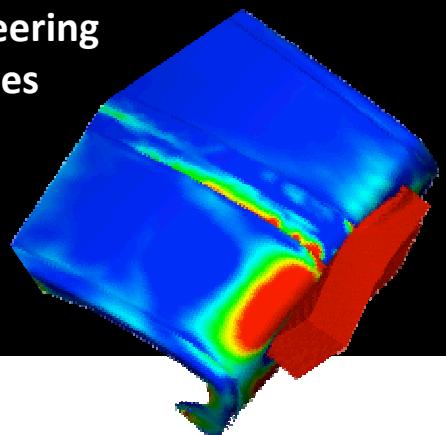


## Materials Science

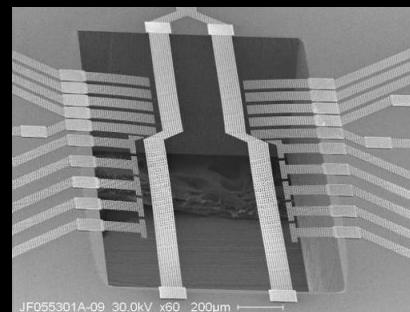


# **Nanodevices & Microsystems**

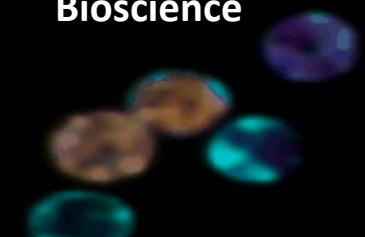
# Engineering Sciences



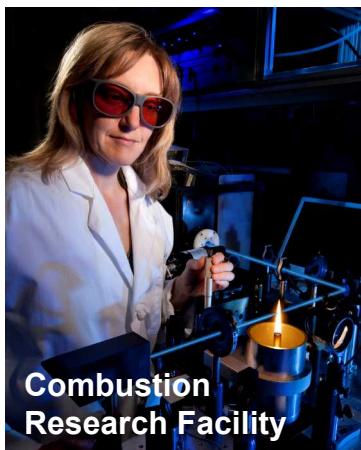
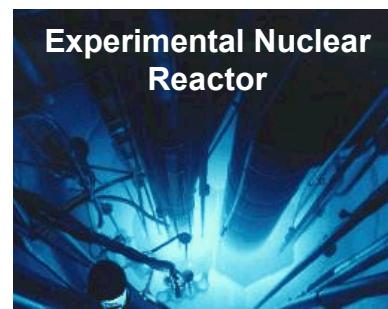
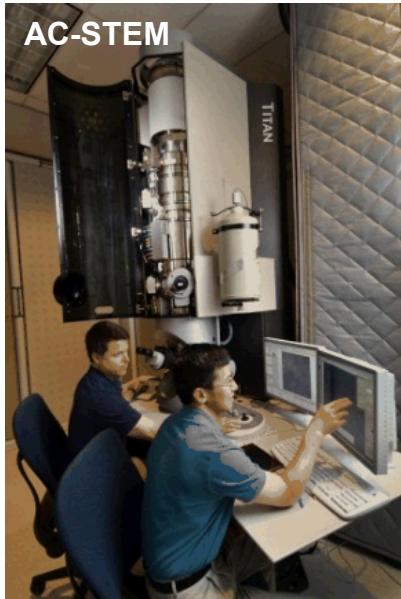
## Geoscience



## Bioscience



# We steward key R&D facilities for the nation



# Sandia is identifying research challenges that focus on big critical path issues



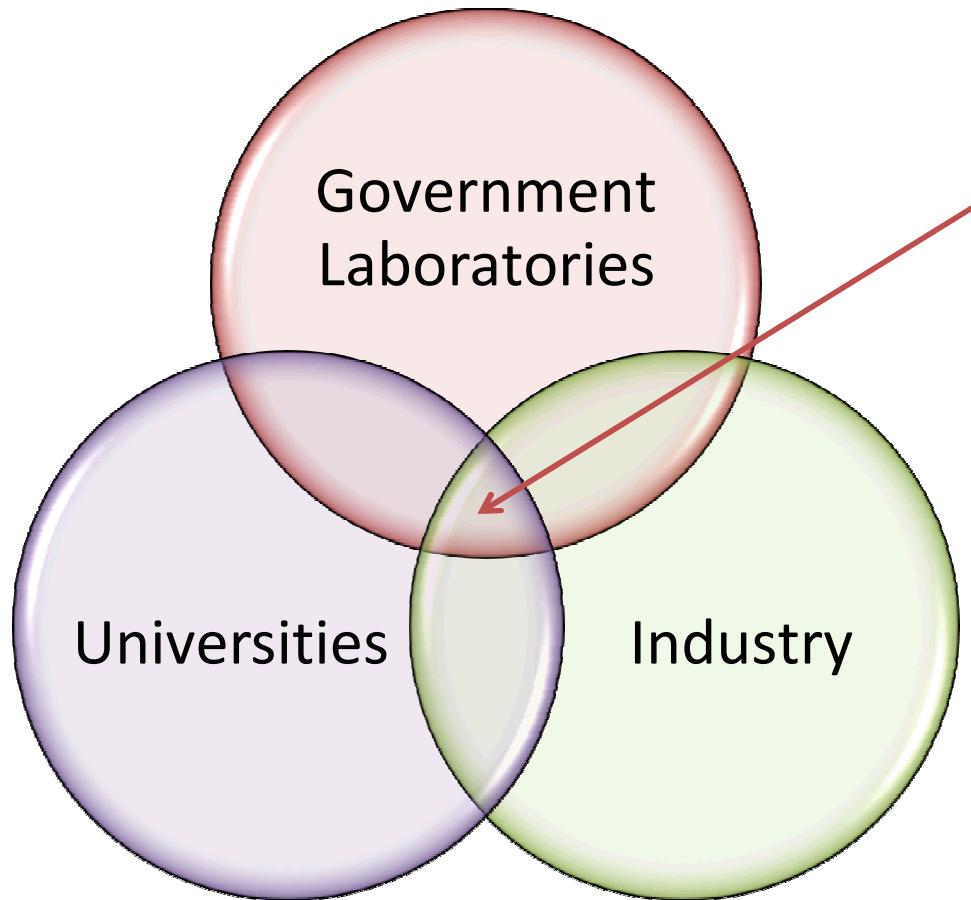
## Research Challenge Characteristics:

- advance the state-of-the-art in science and engineering
- surmount a critical path technical obstacle for a mission challenge
- create differentiating capability for the Laboratory
- bring together a broad cross section of Laboratory capabilities and research foundations
- require an interdisciplinary approach and the active engagement of expertise from fundamental science to technology application
- have a long but finite lifetime
- will result in a long-term science and engineering legacy for Sandia
- the full set will have impact on a spectrum of time scales

# Draft research challenges

- Beyond Moore Computing
- Data Science
- First to High Yield Fusion
- Trusted Systems and Communications
- Detection at the Limit
- Engineering of Materials Reliability
- Cyber Resiliency
- Resiliency in Complex Systems
- Integrative Biological Systems Analysis and Engineering
- Power on Demand
- Embedded Annual Assessment

# Strategic partnerships accelerate innovation



Our partnerships fill critical research gaps and maximize impact through collaboration, technology maturation, and deployment

# Please stick around for our poster session



**bioscience**



**computing &  
information sciences**



**energy & climate**



**nanodevices &  
microsystems**

**2:30 – 4:00 p.m.**

**Network with Sandia  
representatives!**