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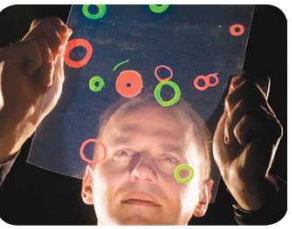

Sandia National Laboratories' Research Strategy

Julia M. Phillips, PhD
V.P. and Chief Technology Officer

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Sandia National Laboratories

Exceptional service in the national interest

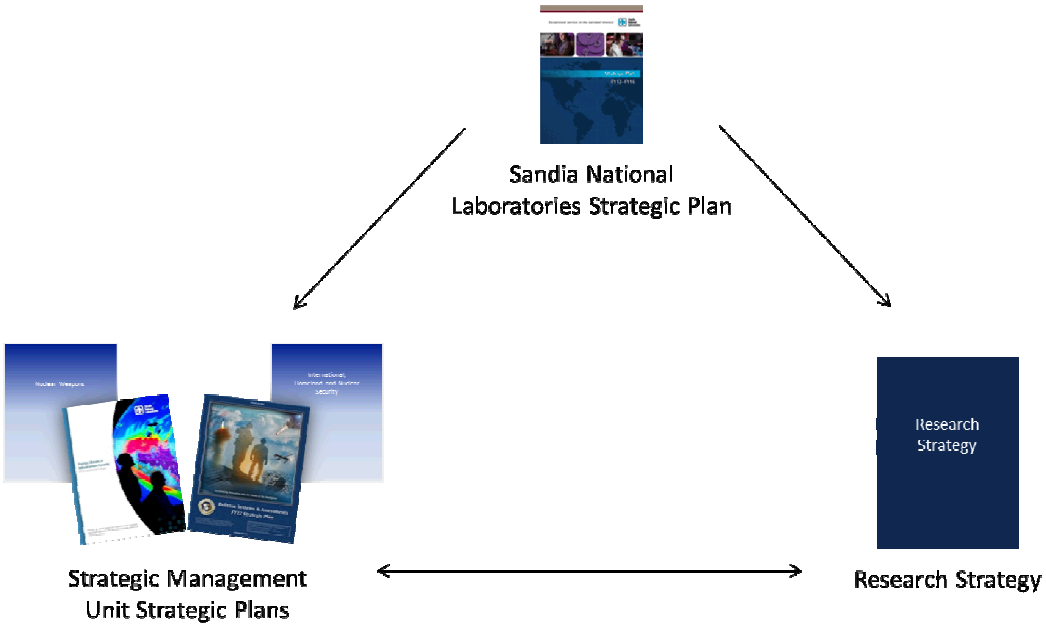
U.S. DEPARTMENT OF ENERGY

NNSA

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.

Sandia's Research Strategy Is Important

- It is a declaration that **research is a critical, vital, and integral component** of Sandia's identity, purpose, and success*



- Executing the strategy enables the Lab to anticipate and respond to national security challenges – **now and in the future**

* Adopted by MLT as part of the SNL Strategic Plan on 10/1/12.

The Objective of our Research Strategy

- A world-class research portfolio that:
  - provides critical differentiation in how the Lab delivers on its mission commitments
    - We must know:
      - Why the work should be done at Sandia?
      - How it will differentiate Sandia's mission delivery
  - 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

Key Characteristics of Research Challenges

Sandia National Laboratories

- 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

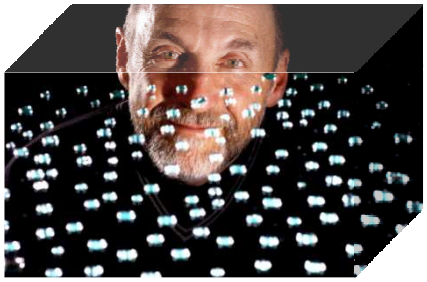
Current Research Challenges

- Quantum Limited Detection
- Beyond Moore Computing
- Cyber Resiliency
- Multi-Physics & Multi-Scale Materials Knowledge to Create Engineered Solutions
- Data Science
- Trusted Systems and Communications
- Power on Demand
- Embedded Annual Assessment
- Resiliency in Complex Systems
- First to High Yield Fusion
- Integrative Biological Systems Analysis and Engineering

This is a work in progress

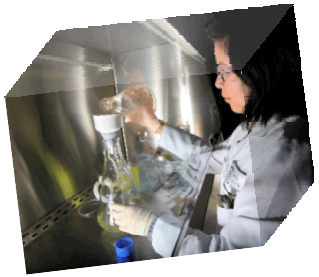
Sandia National Laboratories

Each Research Challenge Needs:



- Sharp articulation and focus
- A strong, interdisciplinary team
- Competitive and partner analysis to define where we can maximize impact and with whom we should partner

- Roadmapping
- Understanding of resource needs (people, capabilities)



- Investment plan
- Dissemination/deployment plan
- Internal and external red teaming