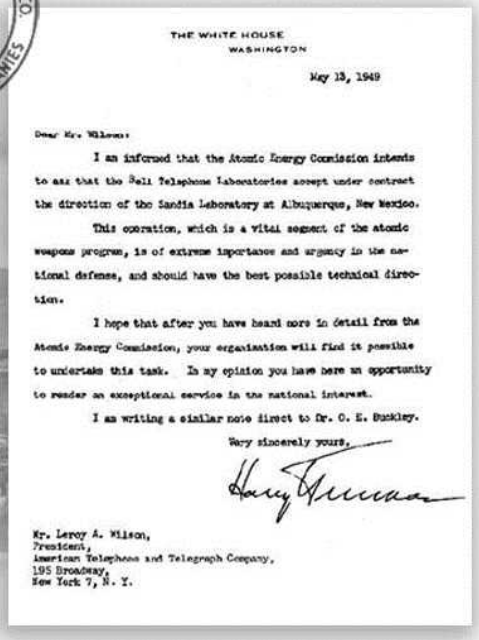
SAND2007-0403P

Overview of Sandia National Laboratories (SNL)
– *with emphasis on Integrated Technologies & Systems*

Al Romig
Senior Vice President
Deputy Laboratories Director for Integrated Technologies and Systems (ITS)
Sandia National Laboratories

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-ACO4-94AL85000

Sandia's History



THE WHITE HOUSE
WASHINGTON

May 13, 1949

Dear Mr. Wilson:

I am informed that the Atomic Energy Commission intends to ask that the Bell Telephone Laboratories accept under contract the direction of the Sandia Laboratory at Albuquerque, New Mexico.

This operation, which is a vital segment of the atomic weapons program, is of extreme importance and urgency in the national defense, and should have the best possible technical direction.

I hope that after you have heard more in detail from the Atomic Energy Commission, your organization will find it possible to undertake this task. In my opinion you have here an opportunity to render an exceptional service in the national interest.

I am writing a similar note direct to Mr. C. E. Buckley.

Very sincerely yours,

Harry Truman

Mr. Leroy A. Wilson,
President,
American Telephone and Telegraph Company,
195 Broadway,
New York 7, N. Y.

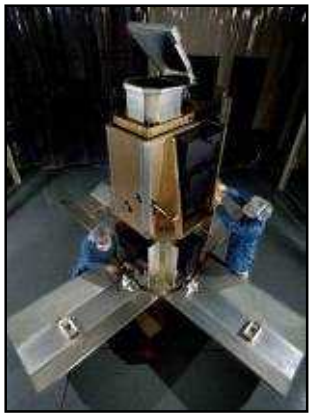
National Nuclear Security Administration

Sandia National Laboratories

Sandia National Laboratories – a National Security Engineering Laboratory

Key mission areas:

- Nuclear Weapons (NW)
- Defense Systems & Assessments (DSA)
- Energy, Resources, & Nonproliferation (ERN)
- Homeland Security & Defense (HSD)

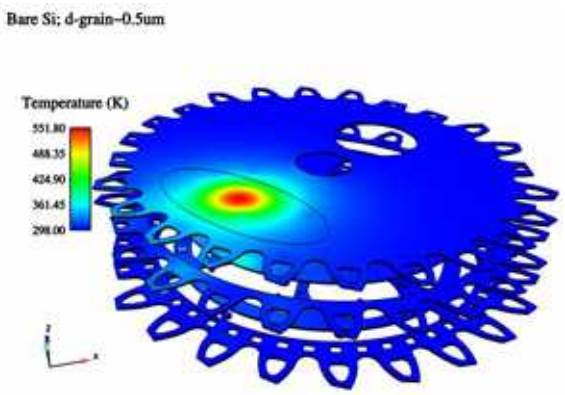


National Nuclear Security Administration

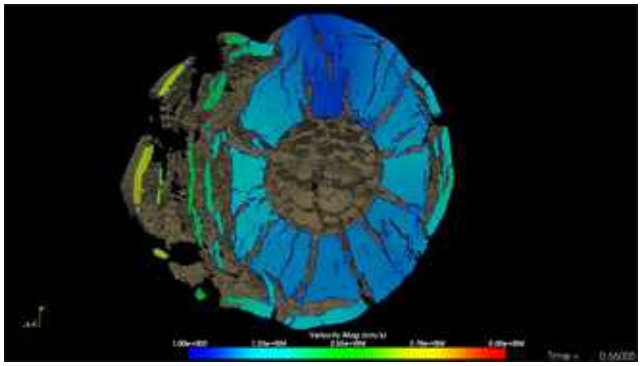
Sandia National Laboratories

Key Mission Areas Rely on a Strong Science, Technology, and Engineering Base

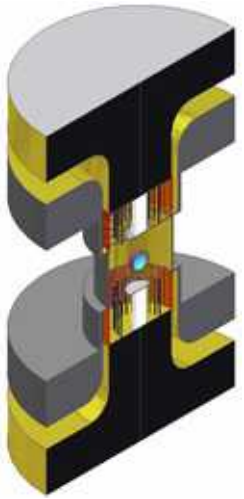
Engineering Sciences

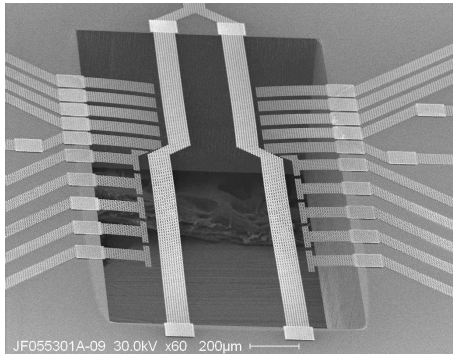


Computational & Information Sciences

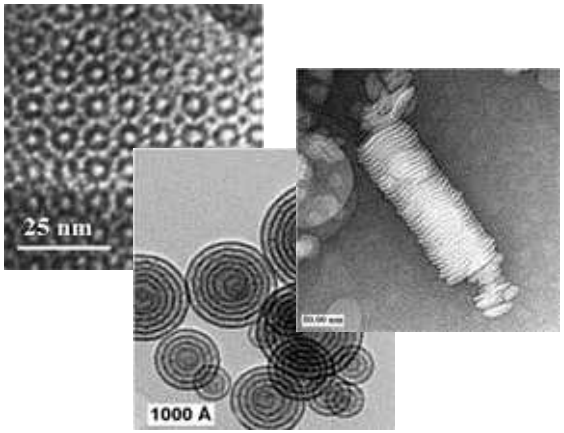


Pulsed Power Sciences

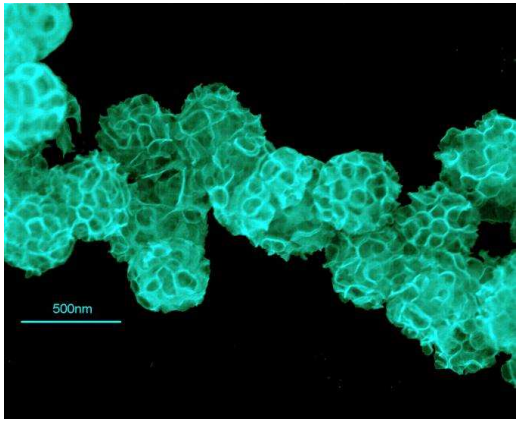




Microelectronics & Photonics Sciences



Materials Science & Technology

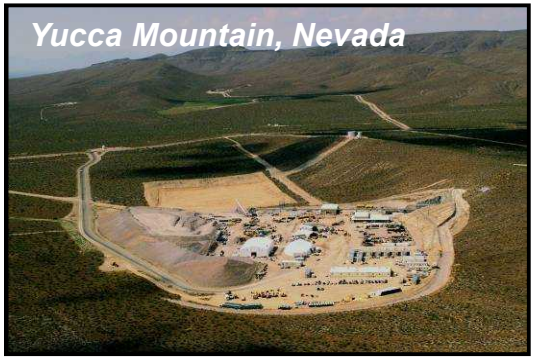


Biotechnology

National Nuclear Security Administration

Sandia National Laboratories

Sandia National Laboratories Locations

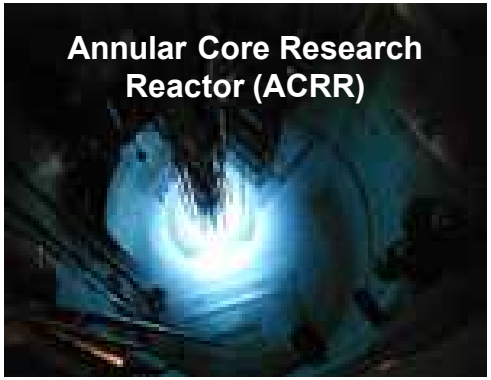


NNSA National Nuclear Security Administration

Sandia National Laboratories

Key Facilities

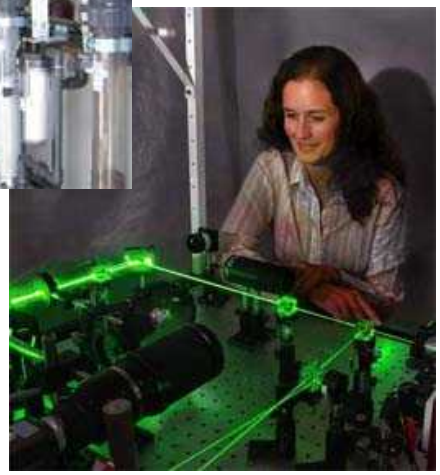
Combustion Research Facility (CRF)

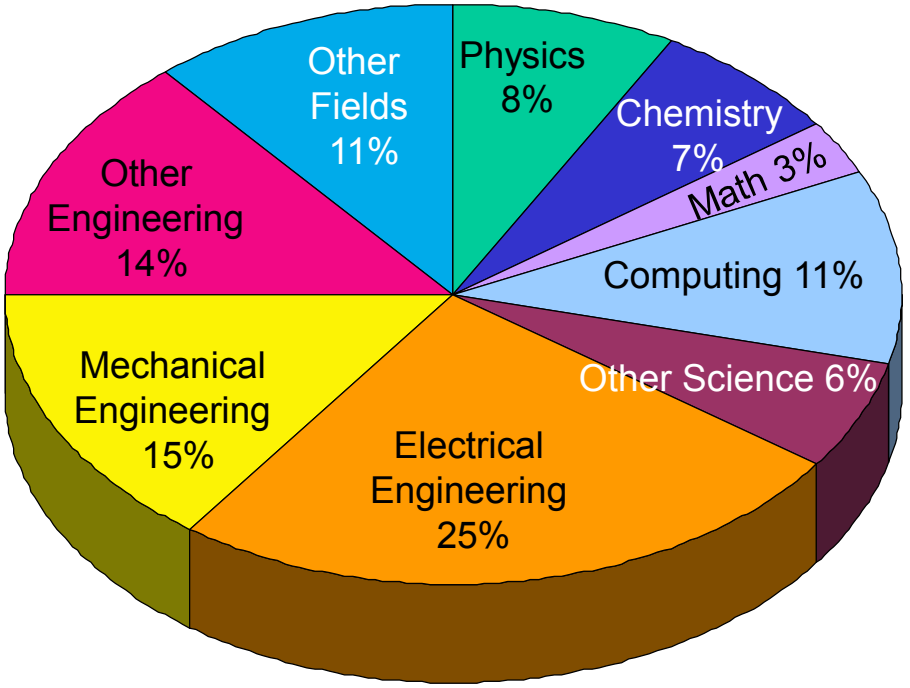


NNSA National Nuclear Security Administration

Sandia National Laboratories

Sandia Maintains a Highly Skilled Workforce





- **Over 8,500 employees**
- **Over 1,500 PhDs; over 2,500 MS/MA**
- **Over 700 on-site contractors**

National Nuclear Security Administration

Sandia National Laboratories

Sandia's Executive Management Structure

Tom Hunter
President & Laboratories Director

Joan Woodard
Deputy for Nuclear Weapons Programs

John Stichman
Deputy Director

Al Romig
Deputy for Integrated Technologies & Systems

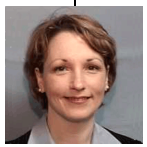
Rick Stulen
Science, Technology & Research Foundations

Steve Rottler
Weapons Engineering & Product Realization

Becky Krauss
Legal

Frank Figueroa
Infrastructure Operations & Business Management

Ron Detry
Security & Information



Kimberly Adams
Human Resources, Communications & Executive Support

Jerry McDowell
Defense Systems & Assessments

Les Shephard
Energy, Security & Defense Technologies

Paul Hommert
California Laboratory

Gerry Yonas
Advanced Concepts

Lenny Martinez
Enterprise Transformation

NNSA National Nuclear Security Administration

Sandia National Laboratories

Sandia's Mission as a National Security Engineering Laboratory

Sandia creates innovative, science-based systems engineering solutions that

- **Sustain, modernize, and protect our nuclear arsenal**
- **Prevent the spread of weapons of mass destruction**
- **Provide new capabilities for national defense**
- **Defend against terrorism**
- **Protect our national infrastructures**
- **Ensure stable sources of energy and other critical resources**

Sandia's Programmatic Organization
– Mission Aligned, Customer Focused

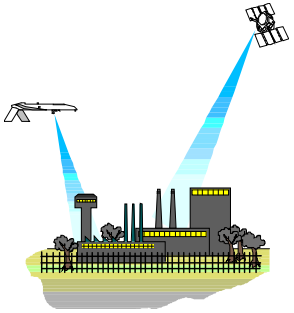
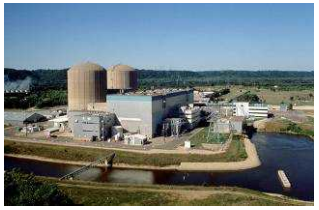
Nuclear Weapons
One Management Unit:

- *Nuclear Weapons (NW)*



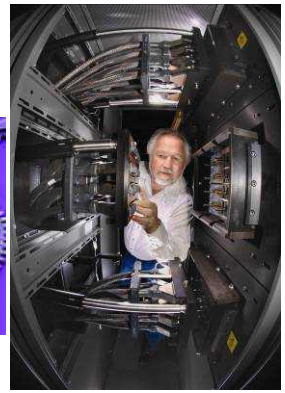

Integrated Technologies and Systems (ITS)
Three Management Units:

- *Defense Systems & Assessments (DSA)*
- *Energy, Resources, & Nonproliferation (ERN)*
- *Homeland Security & Defense (HSD)*


Laboratory Transformation
Two Management Units:

- *Science, Technology, & Engineering (STE)*
- *Integrated Enabling Services (IES)*


NNSA National Nuclear Security Administration

Sandia National Laboratories

ITS SMG Leadership

Al Romig
Deputy Lab Director for Integrated Technologies & Systems

Rick Stulen
S&T and Research Foundations SMU

Steve Rottler
Weapons Engineering & Product Realization SMU

Jerry McDowell
Defense Systems & Assessments SMU

- Proliferation Assessment
- Remote Sensing and Verification
- Surveillance & Reconnaissance
- Integrated Military Systems
- Information Operations
- Intelligent Transformational Systems
- Science & Technology Products

Les Shephard
Energy, Resources, & Nonproliferation SMU

- Fuel & Water Systems
- Nuclear Energy
- Global Security
- Driving the Future
  - Office of Science
  - Breakthrough Science & Technology
  - Intrinsic Security
  - Systems Modeling & Analysis

Paul Hommert
Homeland Security & Defense SMU

- Terrorist Motivations and Intent
- WMD Defensive Systems and Countermeasures
- Borders and Transportation Security
- Force Protection
- Homeland Defense
- Physical Security
- Infrastructure Protection
- Law Enforcement

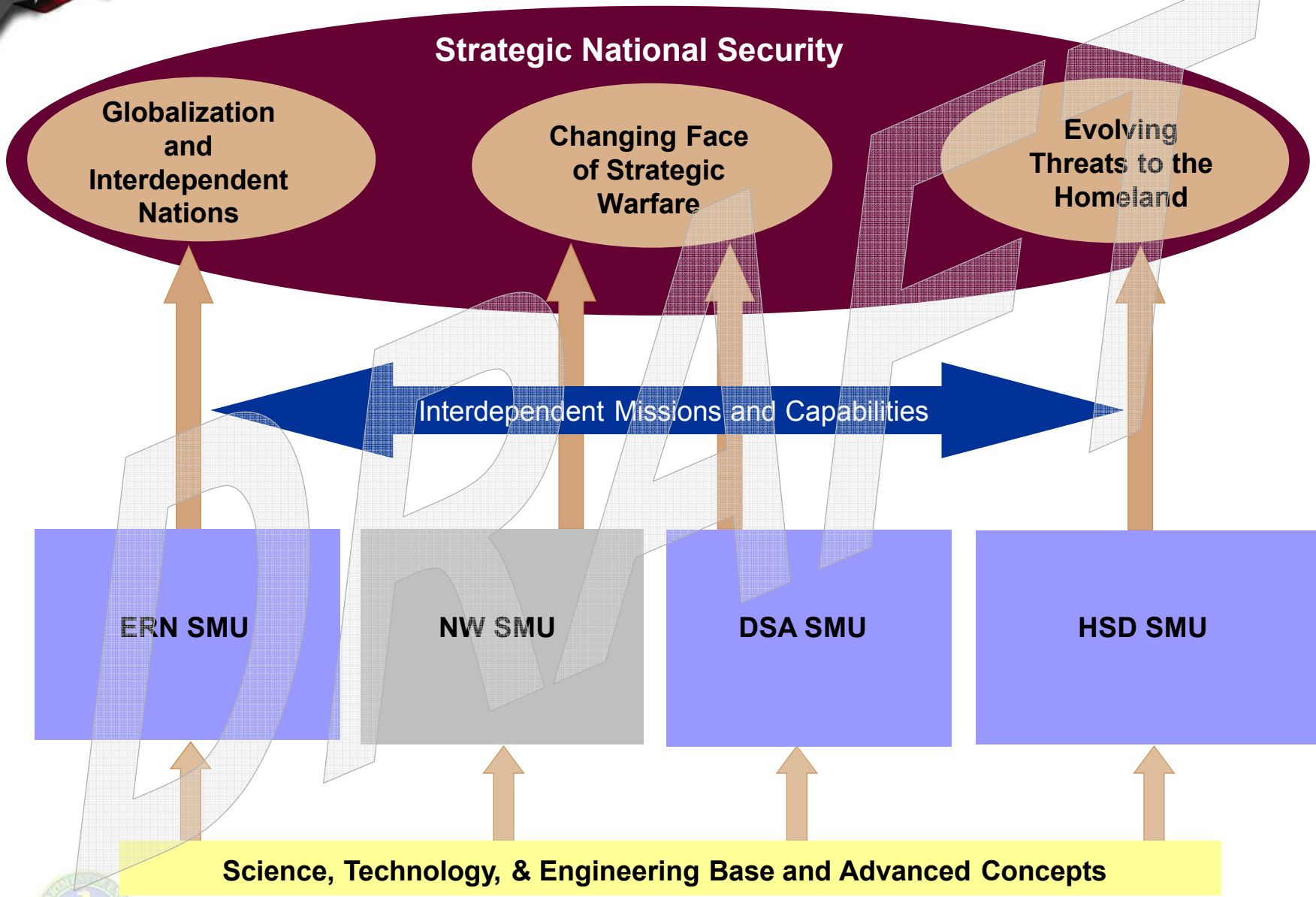
Gerry Yonas
Advanced Concepts

- Future of Nuclear Weapons
- Innovative Engineering Education
- Risk Management
- Transition to New Energy Future
- Neuro Tech for Enhanced Learning and Decision-making
- Evolution & Future of US Conflict

National Nuclear Security Administration

Sandia National Laboratories

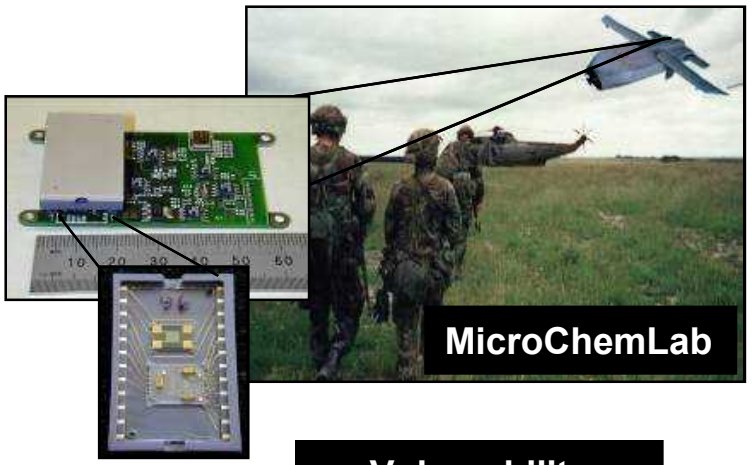
Sandia's Approach to Strategic National Security



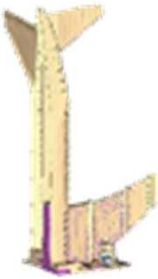
Strategic Capabilities

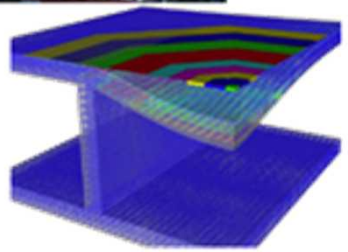
– including the Science, Technology, & Engineering Base

- Nanotechnology
- Microsystems
- Predictive simulation using high performance computing
- Systems engineering
- Field test & remote deployment
- Information systems
- Extreme environments

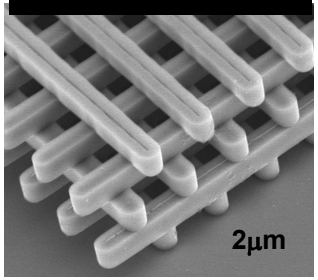


Vulnerability assessments

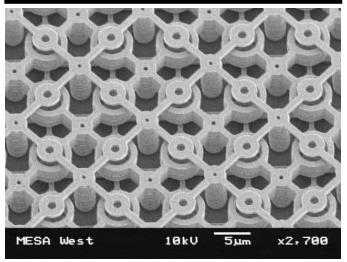




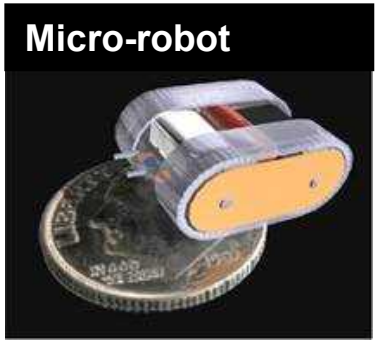
Tungsten photonic lattice



Quantum information processing

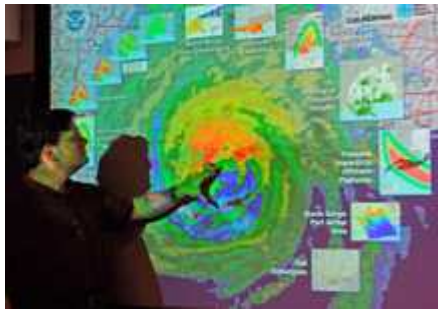


Micro-robot



Some Highlights from Our ITS National Security Work

Katrina Analyses



Support for Shuttle Return to Flight

TACMS-P

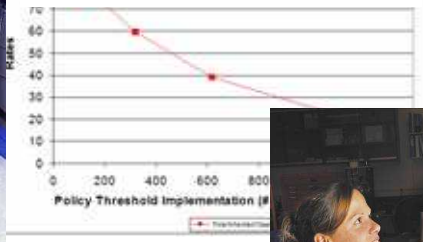
Athena

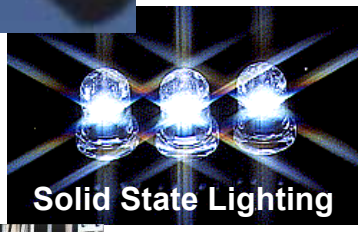
Radiation Monitoring

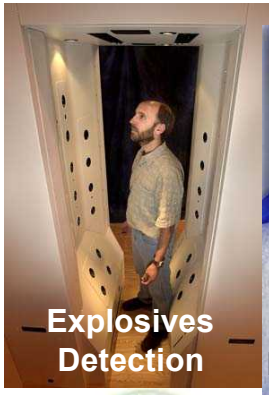
MTI

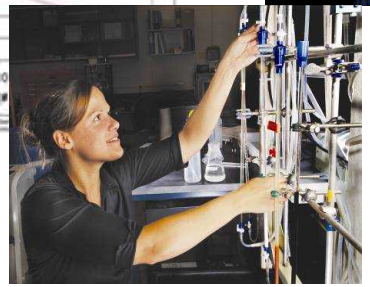
Remotely Operated Weapons System

Preemptive Social Distancing of Children and Teens









Water Analyses

Networked Sensors

National Nuclear Security Administration

Sandia National Laboratories

Integrated Technologies & Systems
Strategic Management Group