# National Lab Roles and Responsibilities in the Precision Strike Enterprise

*A View from the Lawrence Livermore National Laboratory*

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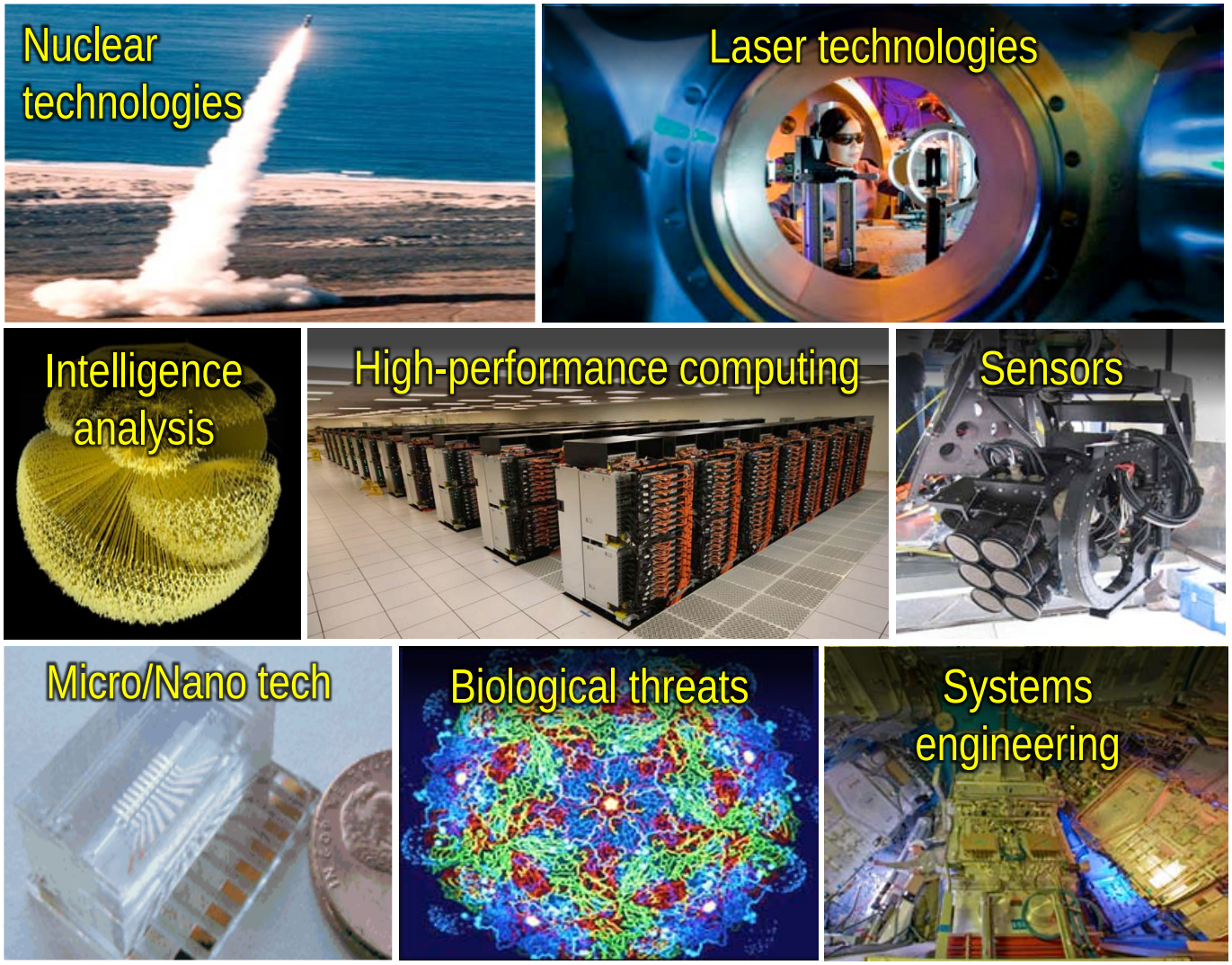
# Livermore's mission is solving national security challenges

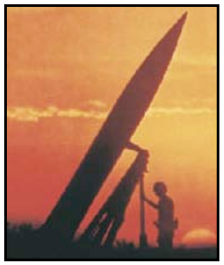


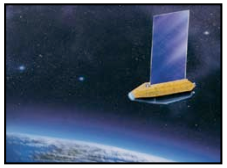
# Our core weapon science competencies are grounded in a 60-year history of solving hard problems for DoD

*For example…*







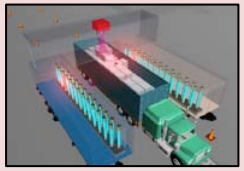
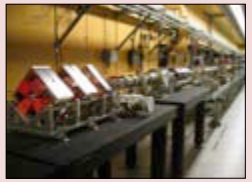








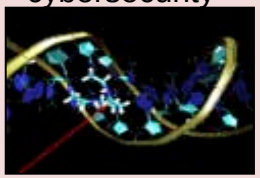




Directed energy weapons
Advanced detection systems

Advanced conventional weapons

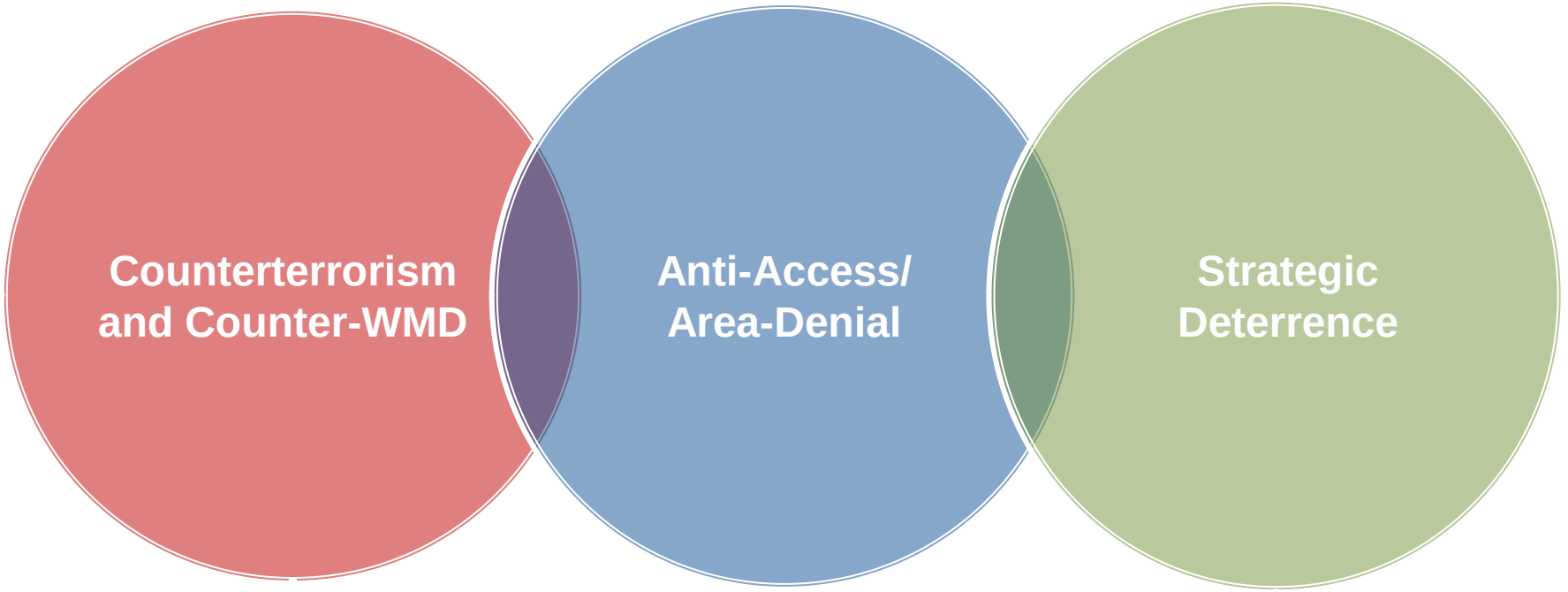
Space situational awareness

Enhanced cybersecurity

Day 1 nuclear forensics

Engineered biological countermeasures

1950s | 1960s | 1970s | 1980s | 1990s | 2000s | Emergent

# We support key DoD strategic priorities




- ISR collection, exploitation
- Intelligence analysis
- Specialized munitions
- C-IED and CBRNE support
- Emergency response

- Long-range precision strike
- Directed energy solutions
- Advanced communications
- Cyber and space support
- Undersea technologies

- Stockpile Stewardship
- Missile defense
- High explosives
- High-performance computing
- Operational support

**Mission-driven science, technology, and engineering support to the warfighter**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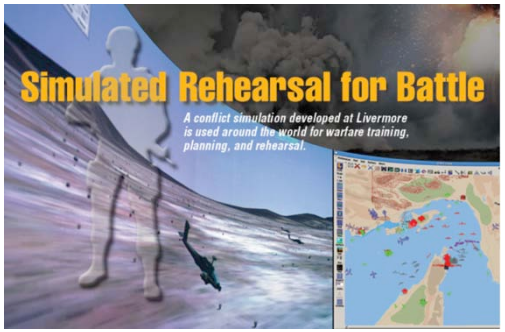
# Start with operational thinking - Livermore maintains tools for DoD Analyses and Planning

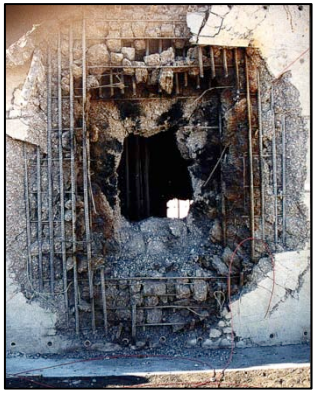
- Counterproliferation Analysis and Planning System (CAPS)
  - Managed for the DIA
  - Supports military planners to counter WMD


- Joint Conflict and Tactical Simulation (JCATS)
  - Managed for DoD J7
  - JCATS is the most widely used conflict simulation tool in the DoD



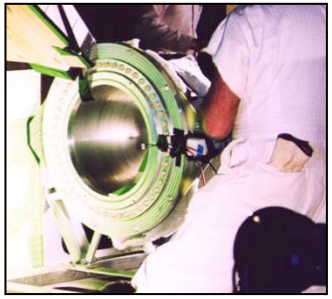

- National Atmospheric Response Advisory Center (NARAC)
  - Provides atmospheric borne info on the consequences of mission execution

# LLNL partners with DoD and Industry to develop & transition advanced conventional weapons



Concrete breaching

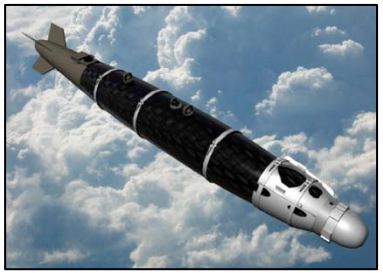

Focused Lethality Munition (GBU-39/B)



Shaped charges

BLU-118/B

Penetration Augmented Munition

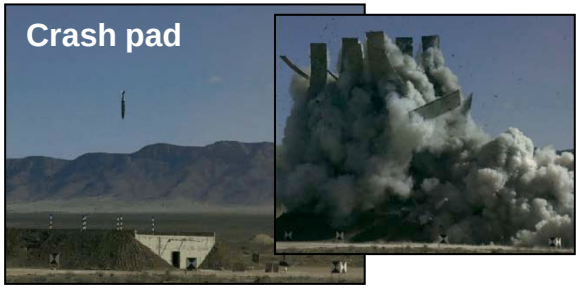


BLU-129/B

Other special-purpose munitions

Prompt Global Strike

AC-130U and APG-80 FCS




Shredder - BLU-109 modified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# To meet DoD's mission priorities the RDT&E community must evolve

## *"Old Mentality"*

- Longer-term RDT&E, decade-scale JCIDS
- Service specific developments and acquisition processes
- National Labs more science than requirements driven
- Lab-to-Industry transitions abrupt (or nonexistent)

## *"New Mentality"*

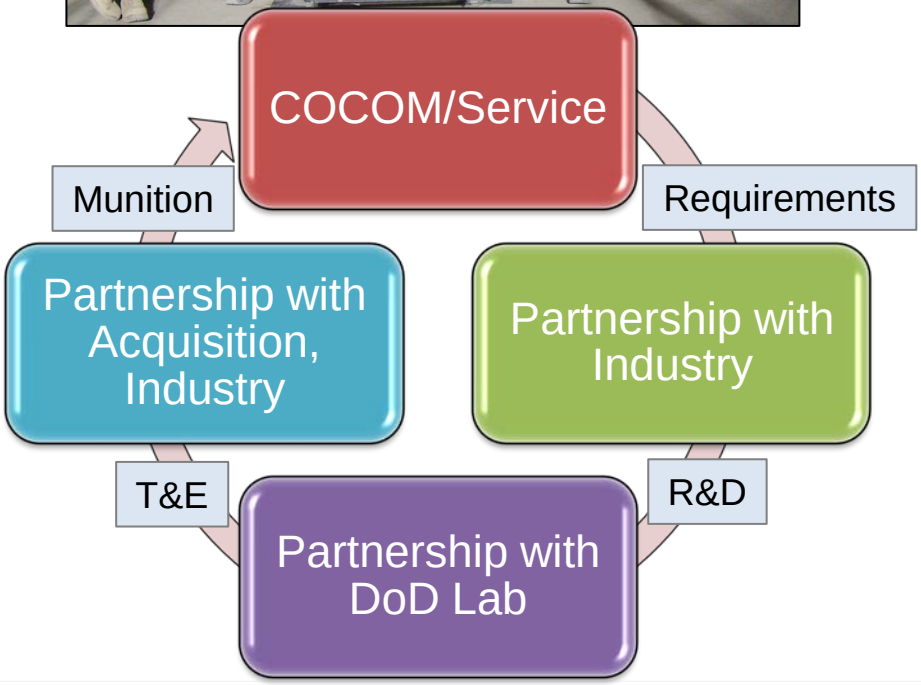
- JUONs & JEONs development cycles
- Hard fiscal choices require cost efficiencies; premium on "Jointness"
- Requirements-driven RDT&E
- Partnerships and seamless handoffs are critical to success

# Strategic focus: Livermore's role in an integrated value chain

- **Key partnerships**
  - Services/COCOMs and OSD. *Know their challenges as our own*
  - National Labs and Industry. *Partners in the munitions development enterprise*
- **Know the DoD challenges, process and community**
  - Understand requirements (help shape when/as appropriate) and the process of requirement to solution. *Work off the "A" list. There is no "B" list*
  - Understand business models of value chain partners. Use best practices and minimize disruption to industry methods/models
- **Stick to our knitting**
  - Advanced simulation using high performance computing and experimental validation
  - Draw on core design and system engineering, computational mechanics, fuze environments, initiation systems, advanced materials development, etc.
- **Stay OUT** of manufacturing beyond prototyping

# A case study in partnering with DoD elements and industry: BLU-129/B

- Warfighter develops requirement and requests Livermore assistance
- Partnered early AFRL and ACC
- Partnered early with Industry to ensure production success
- Warfighter quickly receives munition that meets requirement

# Needed: a robust partnership between COCOMs, Services, National Labs and Industry

Livermore and Sandia are creating a major industrial research park in the San Francisco Bay Area:
The Livermore Valley Open Campus (LVOC)


- Campus-like environment with collaborative space
- Building-level security
- Ready access for all partners, including foreign nationals
- Access to world-renown facilities and resources
- Synergy with community plans for economic growth