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Title:	Overview of Science, Technology and Engineering Programs at LANL
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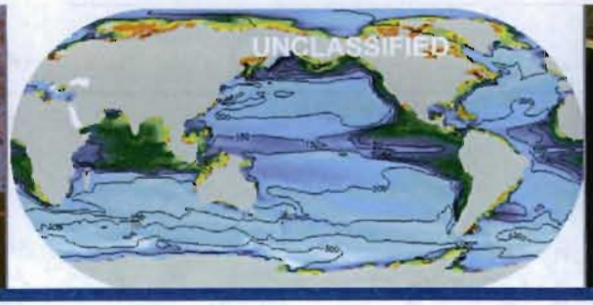
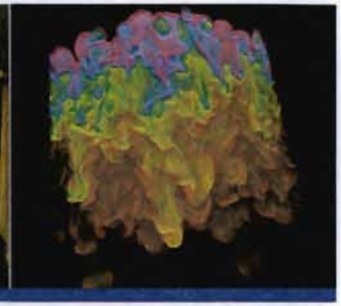
Form 836 (7/06)

Overview of Science, Technology and Engineering at LANL

Terry C. Wallace, Janet A. Mercer-Smith, and Alex H. Lacerda

The Laboratory provides science solutions to the mission areas of nuclear deterrence, global security, and energy security. The capabilities support the Laboratory's vision as the premier national security science laboratory. The strength of LANL's science is at the core of the Laboratory. The Laboratory addresses important science questions for stockpile stewardship, emerging threats, and energy. LANL fosters the strategy of Science that Matters through investments, people, and facilities. The Los Alamos Neutron Science Center provides a key facility to support the Laboratory's mission areas.

Overview of Science, Technology and Engineering Programs at LANL

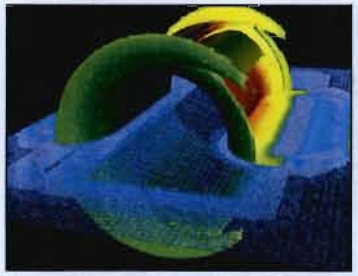
Terry C. Wallace
Principal Associate Director for
Science, Technology and Engineering

February 28, 2011

Mission

LANL Mission: National Security Science

Stockpile Stewardship

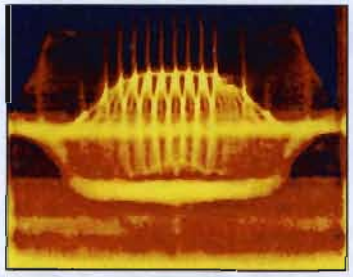


Large-Scale Simulation
Stockpile Stewardship

Pit Manufacturing

B61-7/11 Strategic Bomb

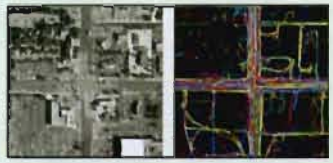
W76, W78, W88
for Trident &
Minuteman III



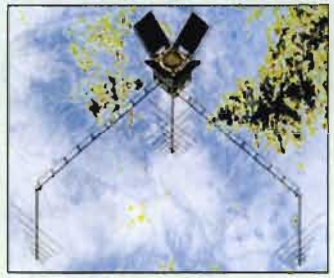
Proton radiography

Global Security

Non Proliferation



Intelligence Analysis

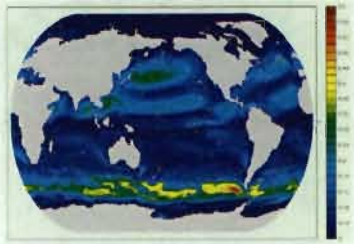


Space Systems
Six other product lines

Energy Security

Materials and Concepts
for Clean Energy

Nuclear Energy



Climate Energy Nexus

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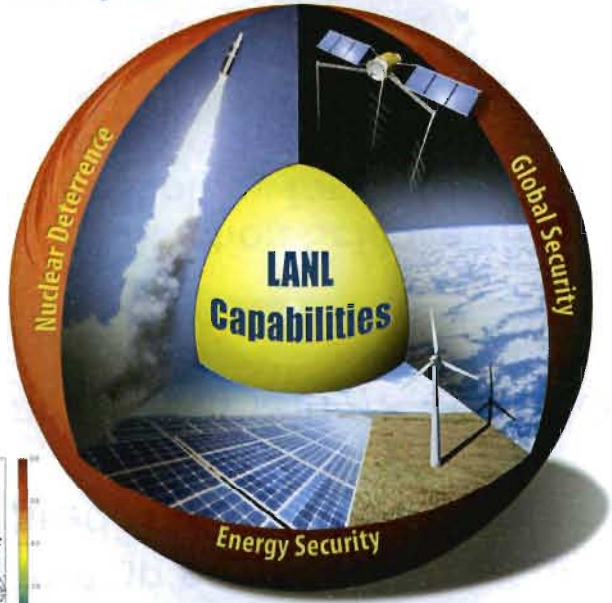
The capabilities of the Laboratory serve program.

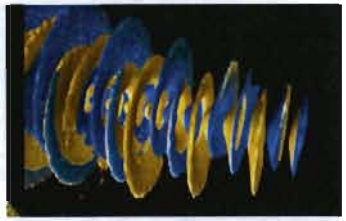
Weapons Science & Engineering

Accelerators & Electrodynamics

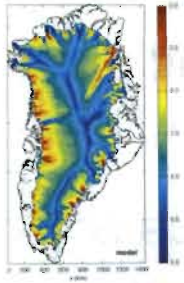
Biosciences



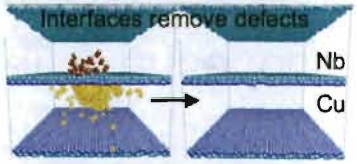
Chemical Science



Computational Physics & Applied Mathematics



Information & Knowledge Science



Materials

Earth & Space Sciences

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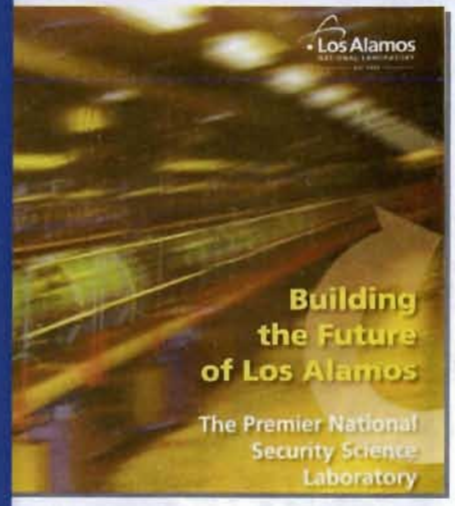
Strategy to Maintain Science Excellence

LANL's Major S&T Initiatives



- Experimental science focused on materials for the future
- Information science and technology enabling integrative and predictive science
- Science of Signatures for enduring national needs

Materials for the Future

Information Science and Technology for Integrative and Predictive Science

Science of Signatures

Controlled Functionality

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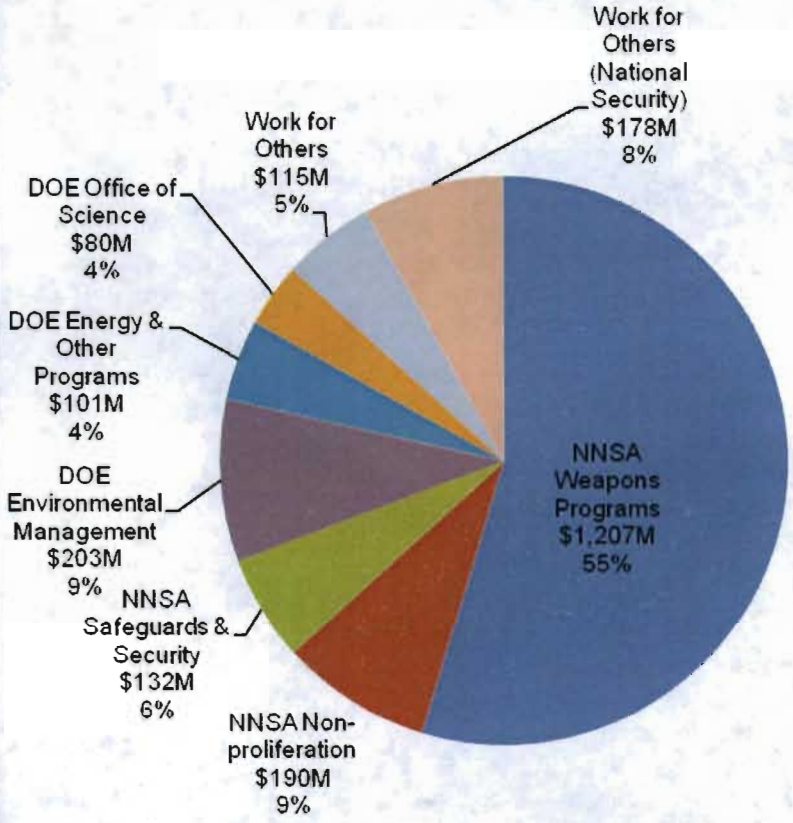
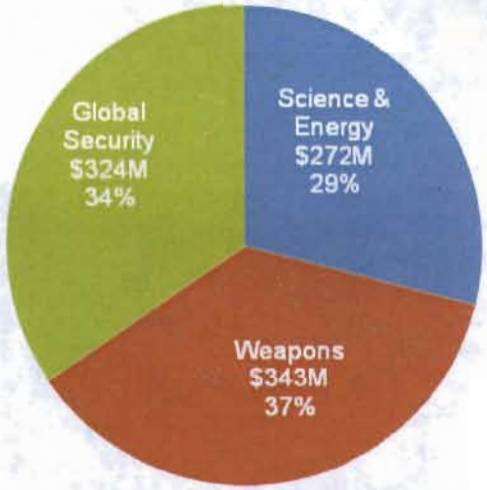
Funding

FY10 Laboratory Budget

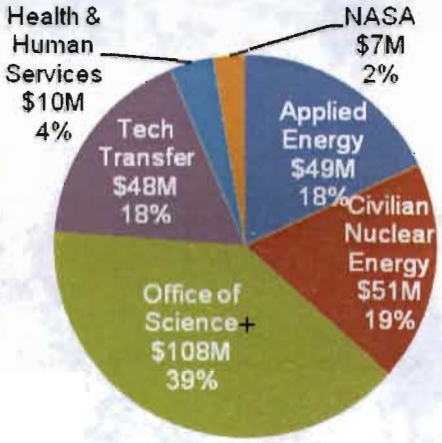
The Lab's FY10 annual budget was approximately $2.2 Billion*



Science & Energy Funding: $273M**



Laboratory's R&D Funding: $939M**



+ Includes Genome, Tropical Western Pacific, and Stimulus

*does not include Stimulus

**includes $31M of Stimulus

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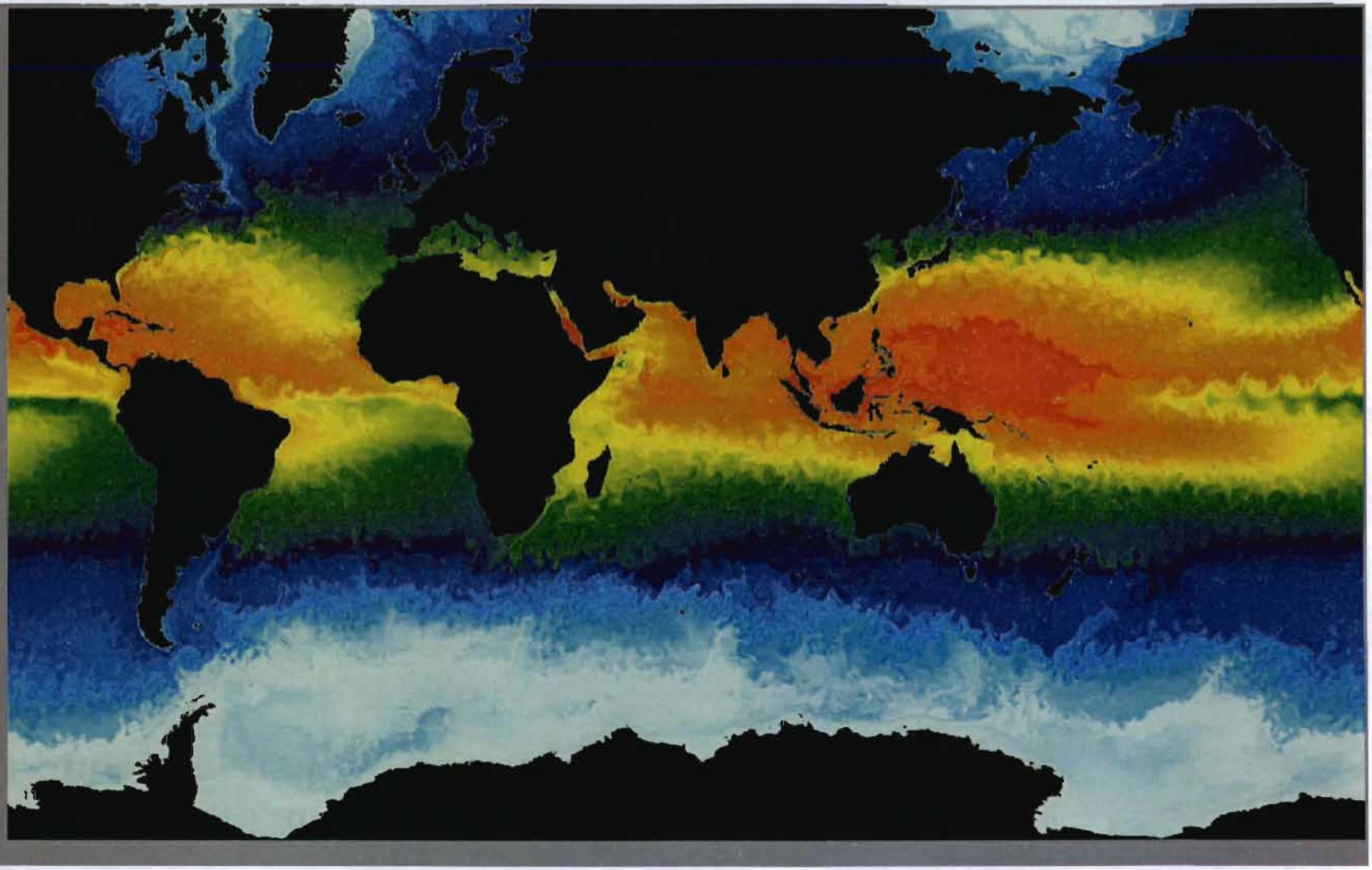
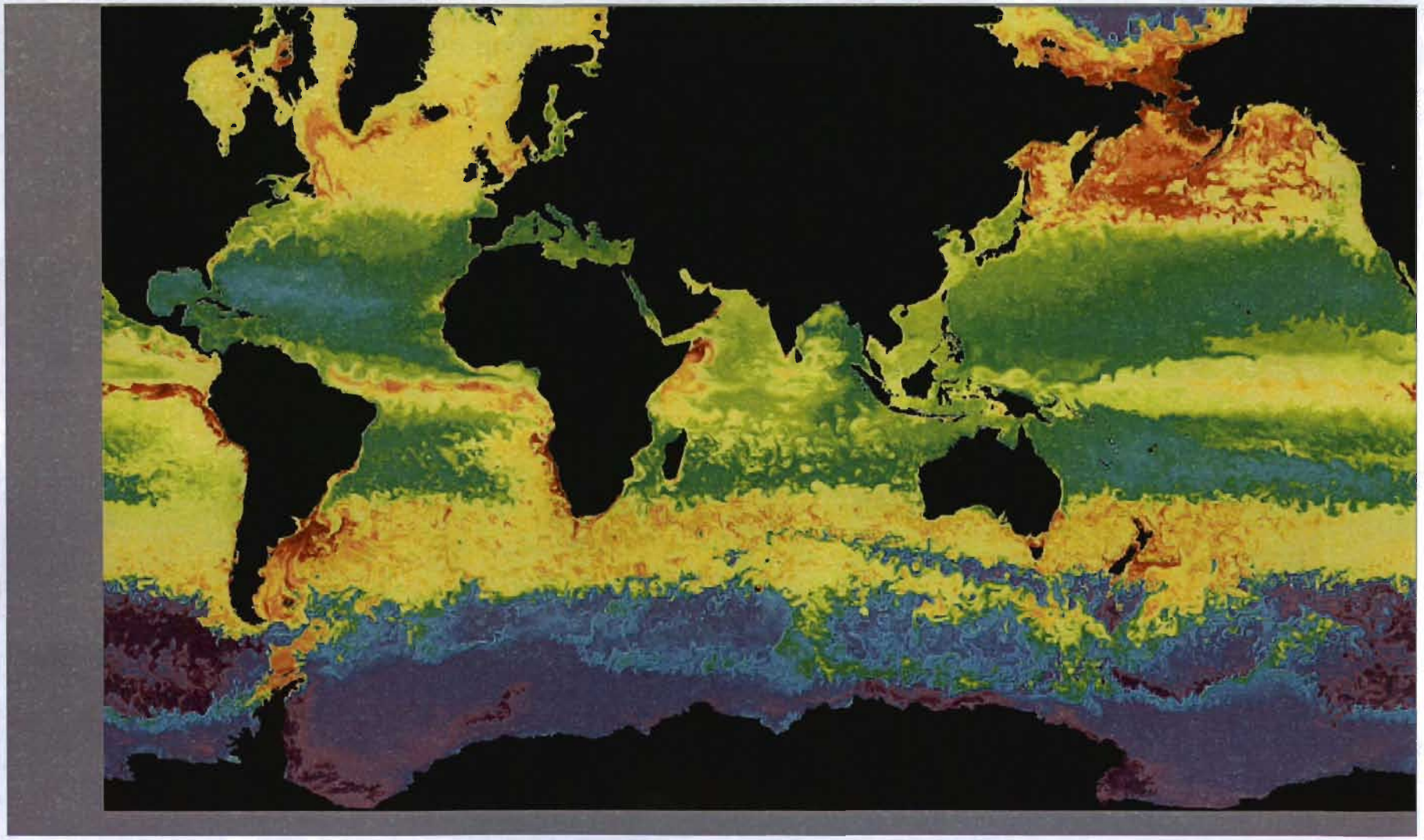
Focus Areas: Climate simulation

Large Scale Simulation: Ocean Circulation



Changes in Chlorophyll Concentration in the Ocean



LANSCE provides the US and international research communities a diverse set of premier facilities.

Unique, highly-flexible beam delivery to multiple facilities 6 mo/yr @ 24/7 with ~ 1200 user visits

Lujan Center

- *Materials science and condensed matter research*
- *Bio-science*
- *Nuclear physics*
- *A National BES user facility*

WNR

- *Nuclear physics*
- *Semiconductor irradiation*

Ultra-cold Neutron Facility

- *Fundamental nuclear physics*

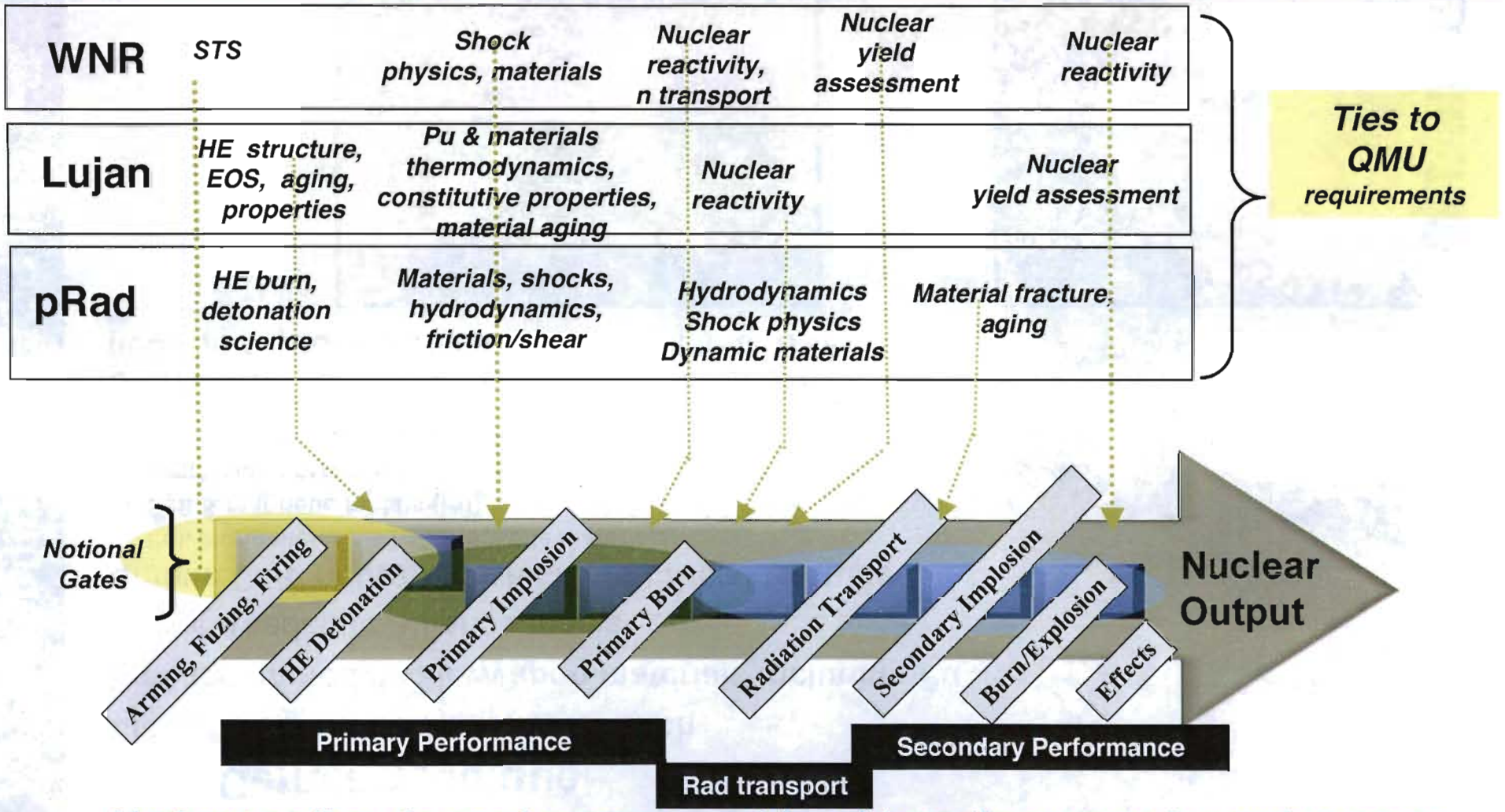
Proton Radiography

- *HE science, dynamic materials science, hydrodynamics*

Isotope Production Facility

- *Nuclear medicine*
- *Research isotope production*

LANSCE facilities are unique and support the broad science-based predictive capabilities required for future certification.



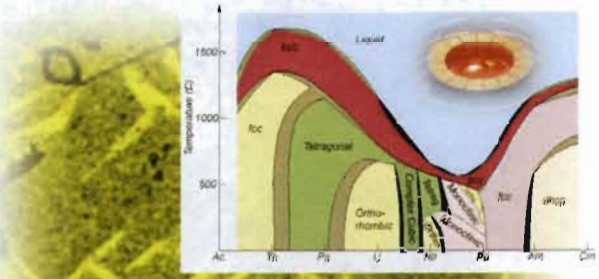
Understanding the performance metrics drives the research requirements.

LANSCE Capabilities

Lujan Center is a key national facility to address weapons materials science and manufacturing issues.

Lujan Center is unique

- Classified national security research
- Can accommodate all weapon materials including Pu
- Active Academic Alliance teams
- Unique Cold neutrons, which are crucial to study
  - Polymeric materials (HE,stockpile materials)
  - Soft & magnetic metals (Pu)
  - Interfaces (corrosion)
  - Glasses and phase separated materials (U_6Nb)
- Unique low-energy nuclear science capability for neutron capture studies of importance to SSP



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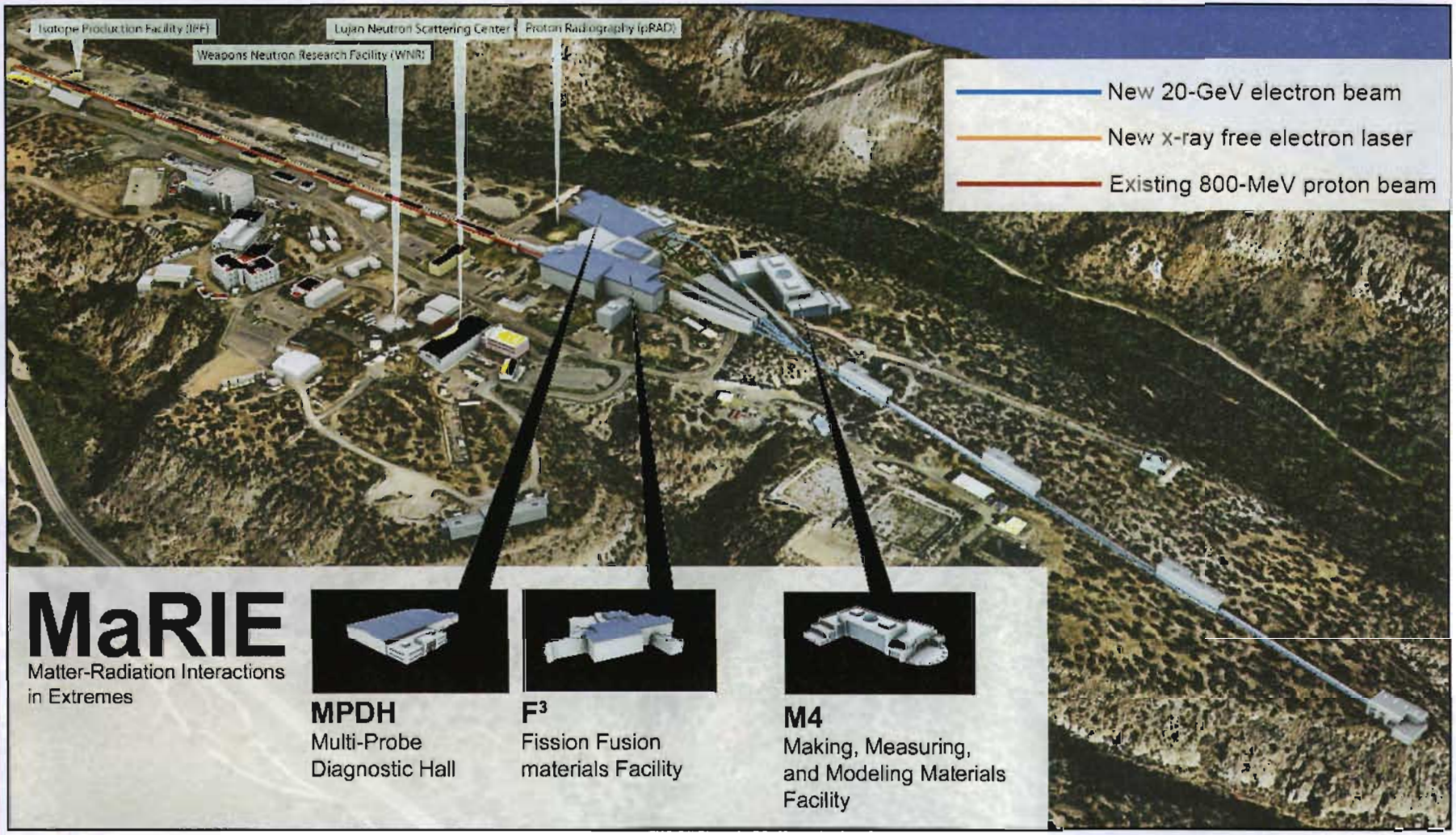
Challenge: Facilities for the Future

LANL has defined an acquisition strategy for MaRIE.



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