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National Labs 101:Multipurpose and Single-Purpose Labs

Dr. Mark Peters

National Labs 101: Multipurpose and Single-Purpose Labs

Dr. Mark Peters
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The 17 U.S. Department of Energy (DOE) National Laboratories are a Cornerstone of the United States' Science Innovation Ecosystem

Launched as part of a wave of federal investment in science around World War II, the DOE National Laboratories have evolved into one of the world's most productive and sophisticated research systems. Over this time, DOE National Laboratory scientists have won 80 Nobel Prizes in the sciences.

Meeting in the Radiation Laboratory at the University of California, Berkeley (UCB) in March 1940 to discuss the 184-inch cyclotron. Left to right: Ernest O. Lawrence, Arthur H. Compton, Vannevar Bush, James B. Conant, Karl T. Compton, and Alfred Loomis.

CP-1 scientists at the University of Chicago on December 2, 1946, the fourth anniversary of their success. ***Back row, left to right:*** Norman Hilberry, Samuel Allison, Thomas Brill, Robert Nobles, Warren Nyer, and Marvin Wilkening. ***Middle row:*** Harold Agnew, William Sturm, Harold Lichtenberger, Leona Woods Marshall, and Leo Szilard. ***Front row:*** Enrico Fermi, Walter Zinn, Albert Wattenberg, and Herbert Anderson

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History – Creation of the Federally Funded Research and Development Centers (FFRDCs)

Public-private partnerships which conduct research for the United States Government beginning with the Manhattan Project

GOCO

Government Owned, Contractor Operated

- Model is based on such Department of Energy (DOE) GOCOs where the facility is owned by the U.S. Government but operated by a commercial firm under a contract between the firm and the government.

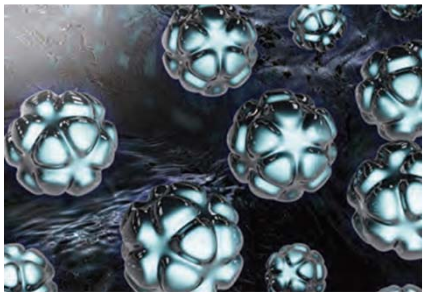
GOGO

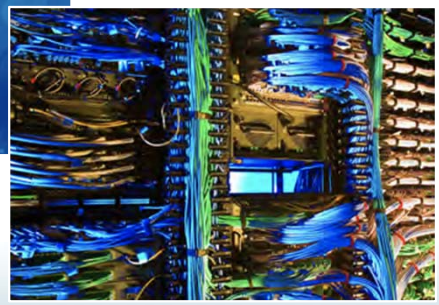
Government Owned, Government Operated

- Facilities are owned or leased by the United States Government, and managed and primarily staffed by employees of the Federal Government. ... They conduct their business representing the Federal Government.

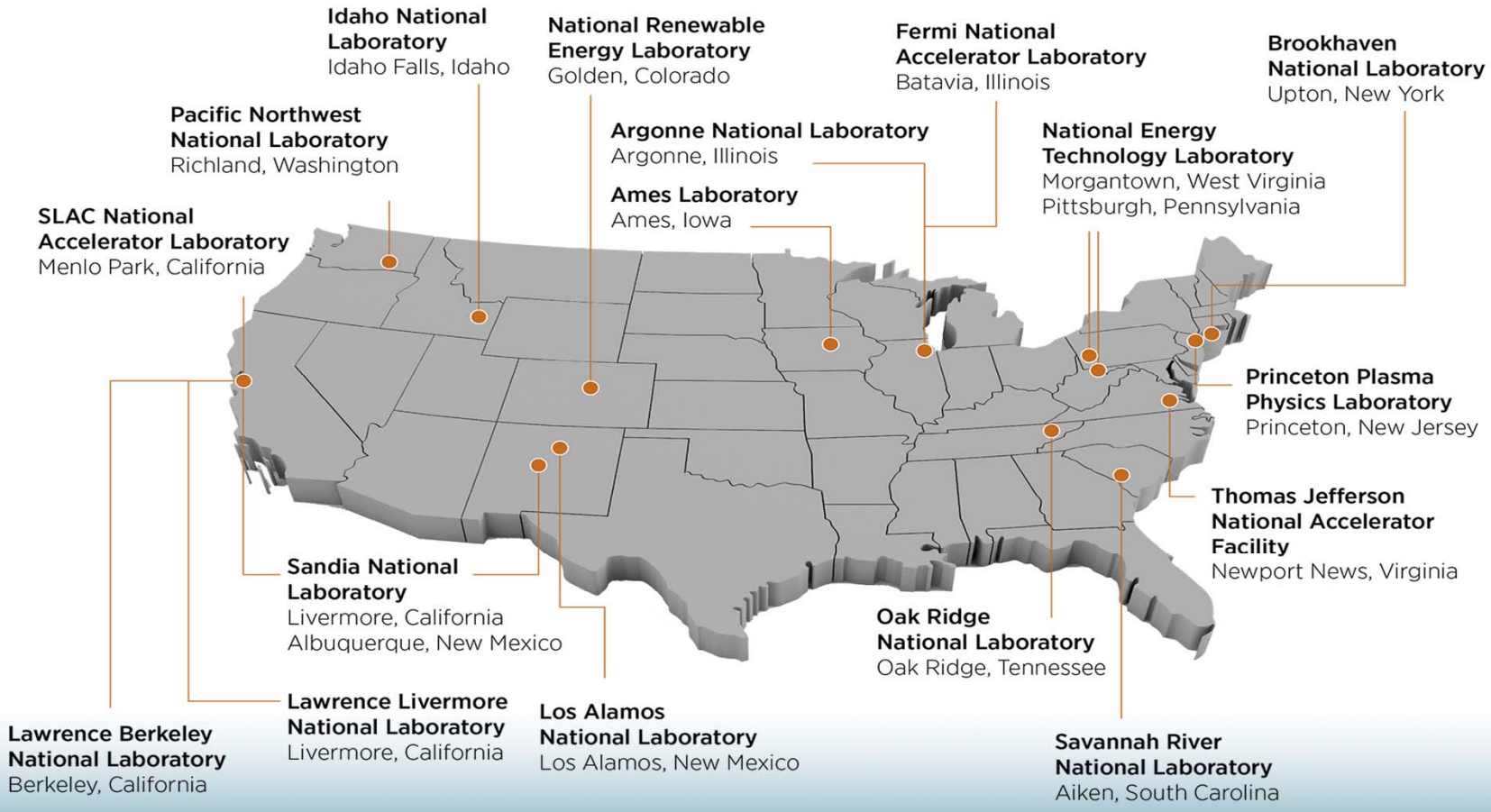
National Laboratory Missions

- **Discovery Science**
  - DOE is the nation's largest funder of the physical sciences.
- **Energy Security and Independence**
  - With research underway on a host of next-generation energy technologies, the National Labs are key to an "all-of-the-above" energy strategy
- **National Security**
  - With origins in the Manhattan Project, an enduring mission of the National Labs has been to enhance national security
- **Economic Prosperity and Global Competitiveness**
  - Through scientific discovery and technology innovation, the National Laboratories advance U.S. economic competitiveness and contribute to our nation's prosperity.





The Value of National Laboratories



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DOE Executes its Missions through Diverse National Labs

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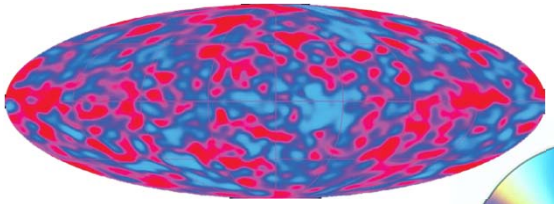
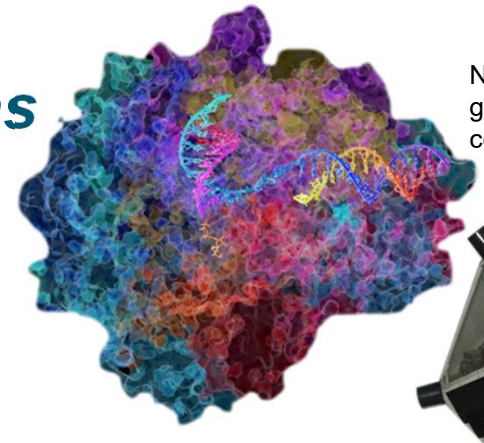
National Lab Breakthroughs



Confirmed the **Big Bang**, and discovered dark energy.

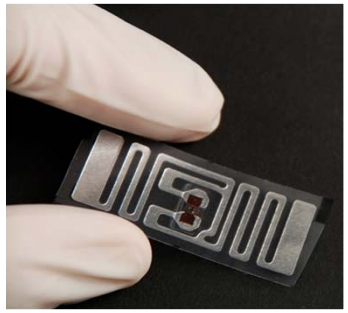
Brought the Web to the U.S. National Lab scientists, seeking to share particle physics information, were the first to install a web server in North America.

The **optical digital recording technology** behind music, video, and data storage originated at a National Lab nearly 40 years ago.

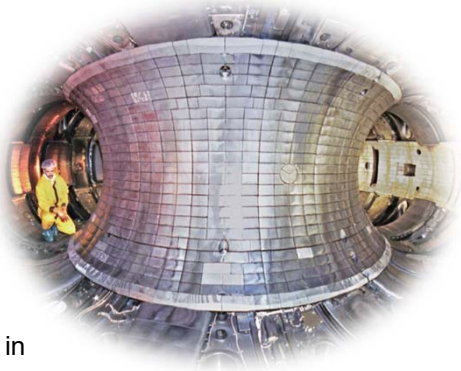


National Lab scientists discovered how genetic instructions are carried to the cell's protein-manufacturing center.

Transformed inventory control. Inventory control has been simplified thanks to advanced radio-frequency identification tagging.



Vela satellites, first launched in 1963 to detect potential nuclear detonations, transformed the nascent U.S. space program.



Showed that fusion is not fantasy

The Chevrolet Volt would not be able to cruise on battery power were it not for the **advanced cathode technology.**

Discovered 20+ Elements

Unmasked a dinosaur killer

University Partnerships Play an Important Role in National Laboratories Successes

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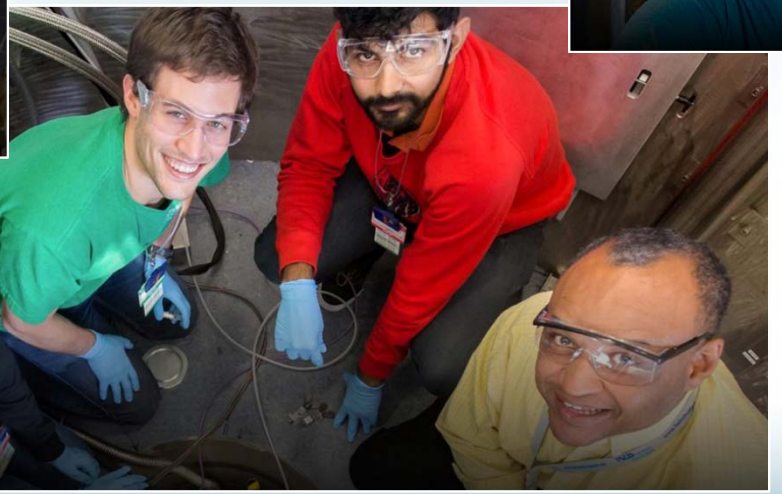
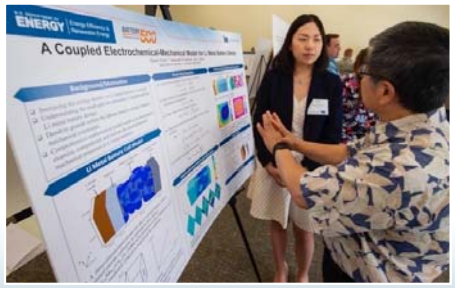
Training the Next Generation of Scientists and Engineers

Building a Workforce – Students, Postdocs, with a Commitment to Inclusive Diversity





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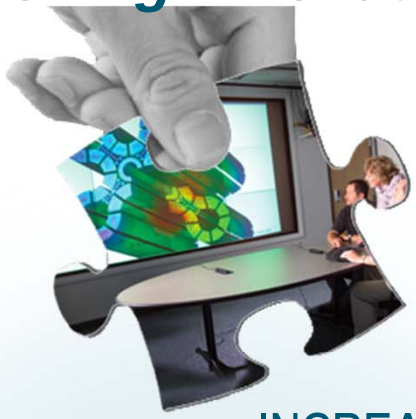
Industry Engagement – Moving Innovation to the Marketplace

The National Lab system partners with industry, subcontractors, academia, community, and the public, elected officials, and stakeholder interest groups.



Focus on Key Area of Technology Maturity

Accelerate Intellectual Property to Market

INCREASE TECHNOLOGY TRANSFER & IMPACT

Increase Federal Partnership Engagement

Increasing the pace of technology to marketplace and fostering economic development

National Laboratory Directors' Council