

LLNL Technology Transfer

for the Commission to Review the Effectiveness of the
National Energy Laboratories



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Industrial Partnerships Enhance Lab S&T investments

Leveraging Industry, Academia, Infrastructure



From a mission-focus perspective, there are four areas where the nature of the security mission means interacting with private sector owners, and operators:

- Stockpile stewardship
- Cyber, Space & Intelligence
- Energy & Climate
- Biosecurity



Capability areas where LLNL S&T “naturally” intersect with the private sector:

- High-Performance Computing
- Computational Science & Engineering
- Information systems & Data Science
- Advanced Materials & Manufacturing
- Biosecurity Science & Engineering



Accelerating Lab partnerships that enhance capabilities, innovation, and national economic competitiveness

Key 21st Century Economic Sectors



Energy
Healthcare Manufacturing
Information Technology

Foundational & Cutting-Edge Science



Applied Science
Systems Engineering
and Analysis

Data Science
Bioscience and
Engineering
AMM



Public/Private Partnerships



HPCIC HPC4manufacturing HAPLS
CES-21 HPC4energy CNMI

HPCIC will facilitate cross cutting partnerships and academic alliances in computing and manufacturing through co-location of facilities and people

AML: Materials design, machine optimization and development



Benefit to NNSA

LACC

AML

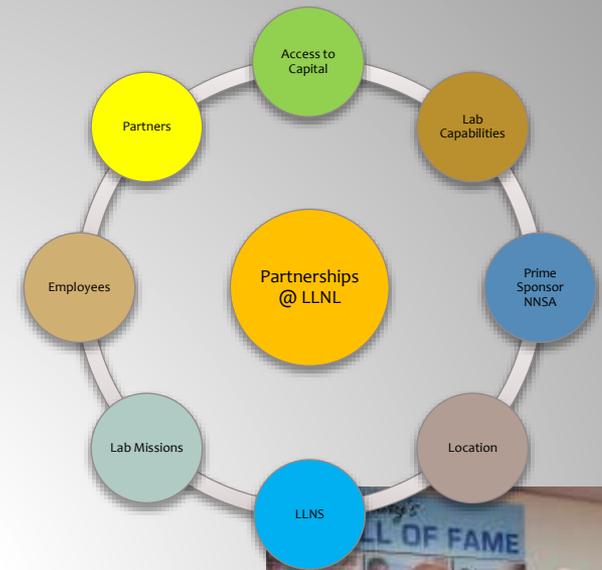
HPCIC

HPCIC: HPC software, algorithm, and hardware development

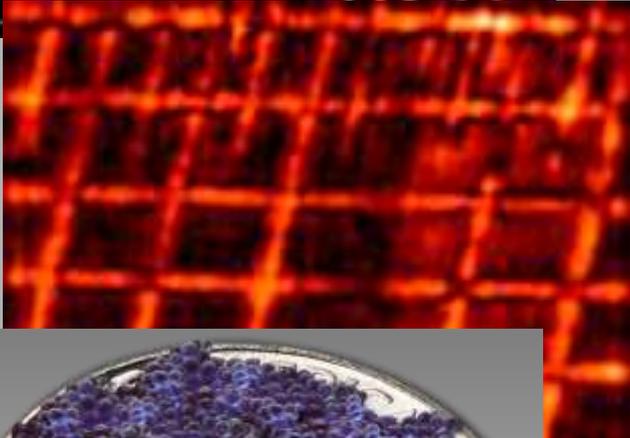


Building a Regional Ecosystem to Enhance Laboratory Impact

- Expanded Entrepreneur Network
 - Industrial Advisory Board
 - Entrepreneurs-in-Readiness (EIR)
 - Developing deeper bench / not just investors
- Developing/Strengthening Partnerships
 - UCOP, UCD, UCB, UC-Merced
 - iGATE, ITV, SVLG, other regional
 - Investor Groups (e.g. Keiretsu Forum)
- Develop Training Program
 - Lab Corps
 - Entrepreneur Academies



LLNL Technology Impacts¹



- **Digital Globe** (which provided the basis for Google Earth)
- **Chromosome painting** (impact on humanity)
- **Mood Ring** (merging of science and emotion)
- **Nanolaminate technology** (giving us exquisite views of the sun, reactive nanofoils, actuated mirrors and capacitors)
- **Micro Impulse Radar** (underlying technology used in “Stud Finder” - aid in building construction)

¹Source: Impact Technology Fund

LLNL technology has transferred directly into the economy

\$400M in annual sales of products based on LLNL technologies in recent years

DYNA3D-like programs save U.S. industry about \$14B annually by significantly reducing the number of automobile crash tests

Four companies started by LLNL scientists have a market value of over **\$12B**


Cepheid


cādence


DIGITALGLOBE


Rambus



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