Embracing Policies that Promote Technology Innovations (Technology Transfer from Federal Laboratories)

Perspective from a DOE & DHS National Laboratory management & operations contractor

Sponsored by USEA United States Energy Association

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Contractors help deliver scientific & economic outcomes from the Nation's greatest scientific institutions

Battelle
The Business of Innovation

- Battelle is chartered by the Will of Gordon Battelle as a non-profit, charitable trust to provide "*the greatest good to humanity*"
- Long history of innovation & commercialization, notably Xerography
- Battelle Ventures: affiliated $220MM fund for technology commercialization
- Strategic intent: *To be a major force in **scientific discovery and technology development** and in the translation of knowledge into innovative applications that have significant societal and **economic impact** in order to be a benefactor for **education** and charitable enterprises.*

DOE Pacific Northwest National Laboratory

DOE Idaho National Laboratory

DOE National Renewable Energy Laboratory

DOE Lawrence Livermore Nat'l Laboratory

DOE Brookhaven National Laboratory

DHS National Biodefense Analysis and Countermeasures Center

DOE Oak Ridge National Laboratory

UK National Nuclear Laboratory

U.S. global lead in R&D is a strong basis for tech transfer & innovation for economic growth

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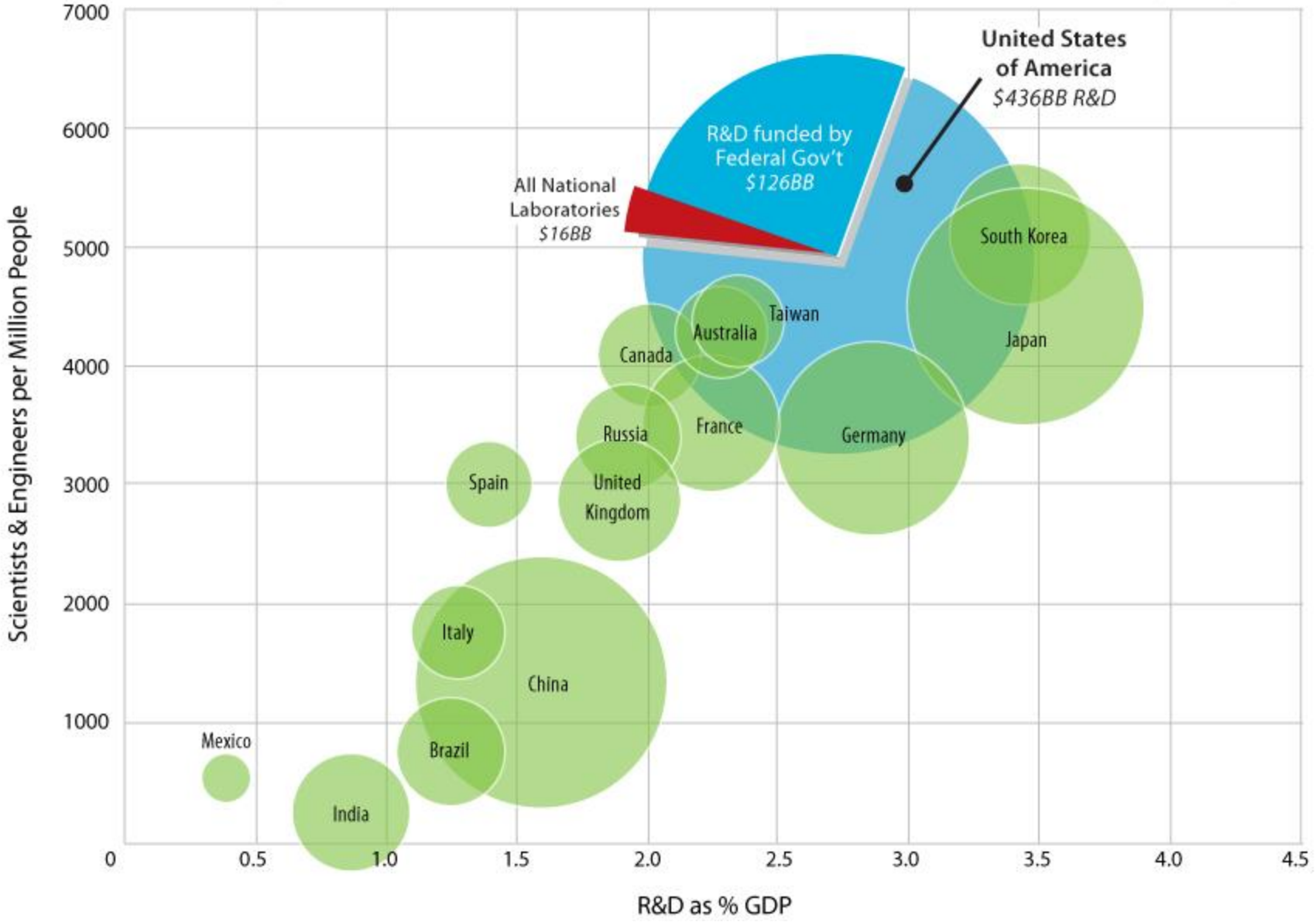
R&D investment by US & selected trading partners. Size of circle reflects the relative amount of annual R&D spending by country noted



Source: Battelle, R&D Magazine, International Monetary Fund, World Bank, CIA World Factbook, OECD, NSF

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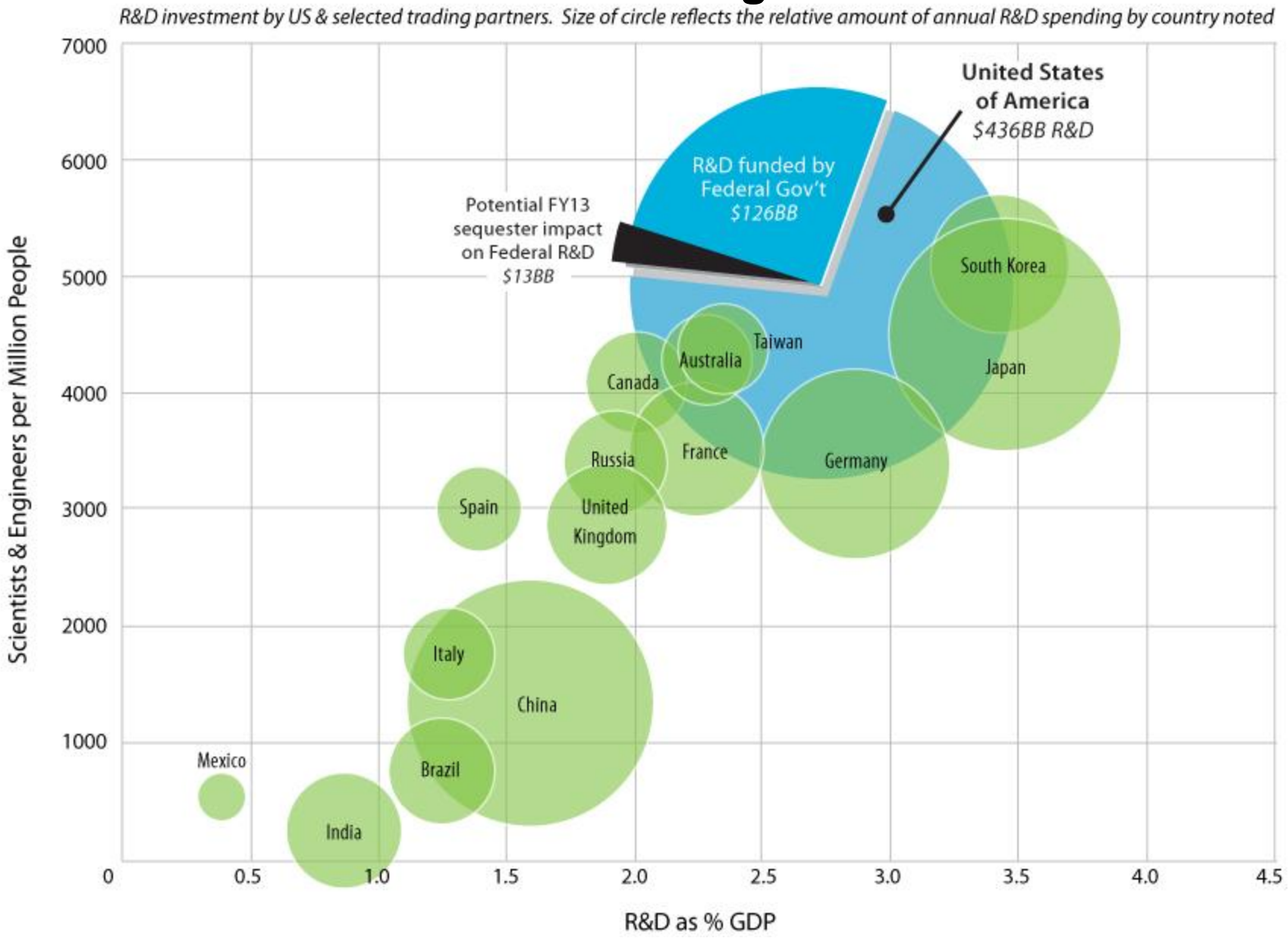

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Tech transfer at DOE labs has multiple modes

and strong record of successes that Battelle seeks to replicate

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Applied research oriented toward commercial deployment

- **Efficient Oil Burner Systems**
- Award-winning industry collaboration for tech transfer (Honeywell, B&W, ConEdison, etc)
- Since 1980, this research has resulted in estimated savings of over $25 billion in fuel costs to U.S. consumers

BNL

Basic & applied research oriented toward eventual tech transfer

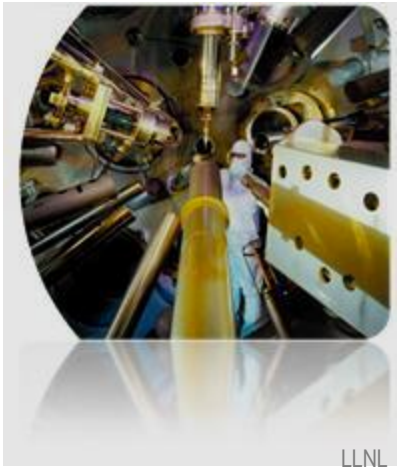
- **Materials for Energy**
- Alloys for generation sys-tems, battery & super-capacitor nanomaterials , energy harvesting, etc
- A hallmark of DOE National Laboratory capabilities
- "Fills a critical gap in private sector R&D capacity"

- Carpenter Steel

ORNL

Serendipitous technology transfer from mission-driven research

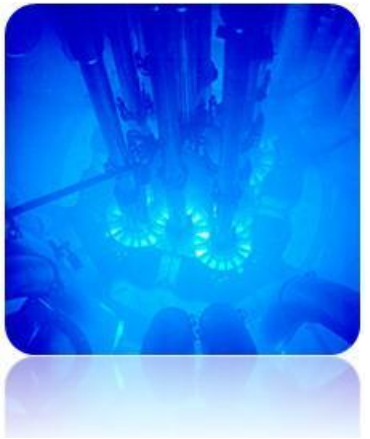
- **Micropower Impulse RADAR**
- Outgrowth of the world's fastest solid-state digitizer, designed to measure sub-nanosecond events generated by fusion-related experiments on the LLNL's Nova laser (a NIF predecessor)
- 11 licensees, e.g., GE



LLNL

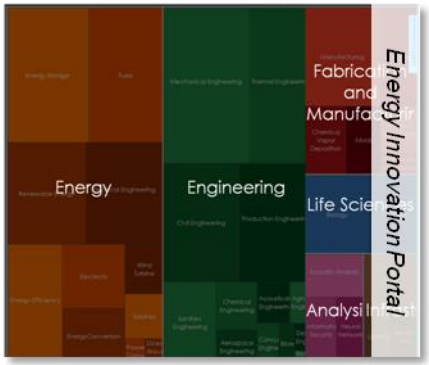
Tech transfer from work at unique "big science" HPC & user facilities

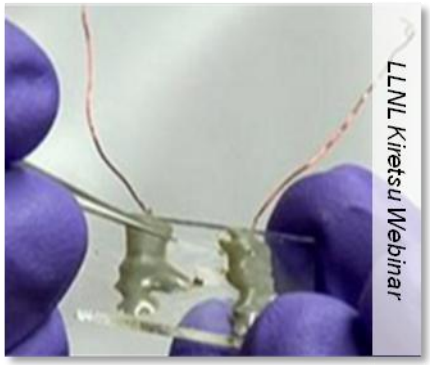
- **Advanced Test Reactor**
- Testing new fuels & components of next-gen designs like HTGR
- DOE"s newest User Facility is the ***Energy Systems Integration Facility*** at NREL - a MW-scale test facility that integrates elec-tricity, thermal, and fuel systems with high performance modeling & simulation capabilities

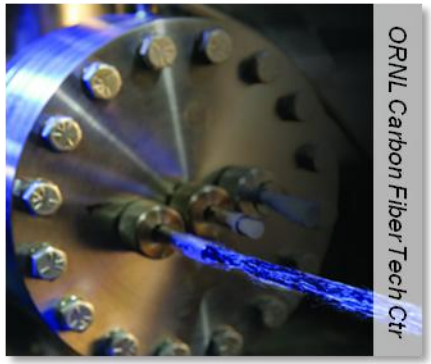


INL

Contractors have important role to support tech transfer acceleration initiatives from DOE & labs







Engaging industry

- Agreements for Commercializing Technology
- Receptivity & response to public feedback re: more contemporary contracting terms
- Energy Innovation Portal

Supporting small business & job creation

- Startup America
- Kieretsu engage-ment network anchored by LLNL
- DOE HQ support for entrepreneurial environment
- LabStart EIR program at LANL

Creating a supportive culture for tech transfer

- Strong support of DOE HQ (esp. TT Coordinator) & Laboratory leader-ship (incl Nat'l Lab Directors' Council)
- Leadership of other Federal agencies like Dept of Commerce (e.g., NIST; USPTO)

Translational initiatives & proof-of-concept centers

- Facility examples: ORNL's Carbon Fiber Technology Center & Mfg Demonstration Facility; NREL Process Develop-ment & Integration Laboratory; LLNL Open Space