

The Changed S&E Landscape: Seizing Opportunities



Speakers:

TARUN CHHABRA

Special Assistant to the President and
Senior Director for Technology and National Security, National Security Council

L. RAFAEL REIF

President Emeritus, Ray and Maria State Professor of Electrical Engineering and Computer Science
Massachusetts Institute of Technology

DAVID SPERGEL

President, Simons Foundation

Moderator:

Darío Gil, NSB Chair



A Changed Science and Engineering Landscape

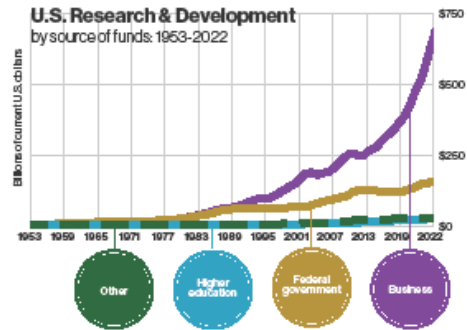
Three foundational trends have changed the U.S. S&E landscape and urgently require a national response. What new models, new investments, new partnerships, new approaches will equip the U.S. to meet the moment – both its opportunities and challenges? How can we ensure U.S. leadership in critical and emerging technologies and a robust STEM workforce?

1 Federal investment is the foundation but business funds most U.S. R&D

Only the federal government can invest across all fields, across the nation, at scale, and over sufficiently long-time horizons to create new knowledge and invent new technologies that will help us to address current and future security, health, and economic challenges. Federal investment in basic research enables the creation of emerging industries.

However, business funding of U.S. R&D surpassed federal funding in the 1980s and now dominates the U.S. S&E enterprise. Nearly 80% of business investment is in experimental development – the stage when near-term commercial benefit is real.

Industry is well positioned to advance knowledge in targeted fields, and the business sector funds 37% of total U.S. basic research. But industry investments are focused in specific areas and cannot replace Federal investments' breadth.

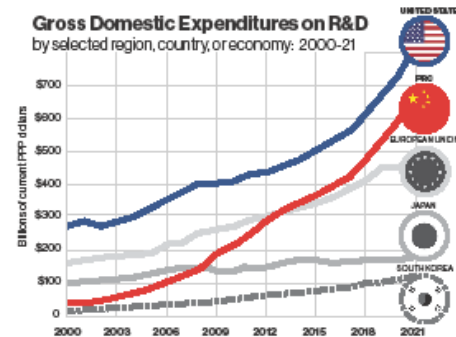


KEY CONSIDERATIONS:

The nation needs new partnerships and collaborations across sectors. How might they join forces to meet national needs?

Robust federal funding of basic research is urgently needed. How can it be most impactful? Leverage other sectors? Advance critical areas?

Gross Domestic Expenditures on R&D by selected region, country, or economy: 2000-21

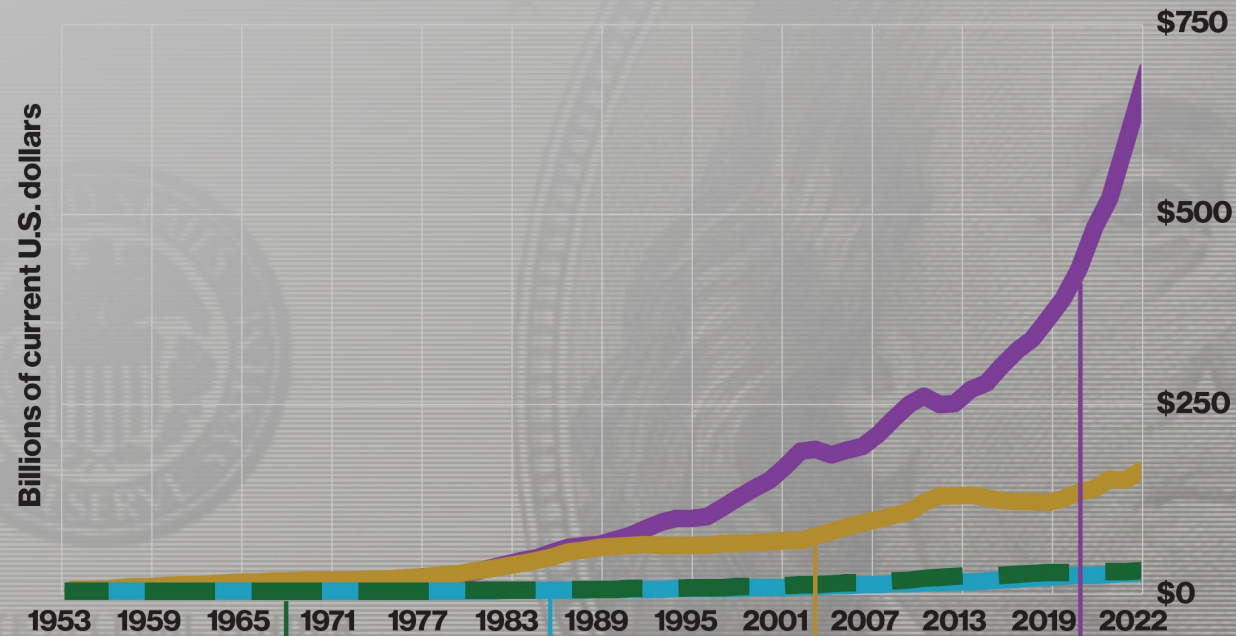


2 The People's Republic of China (PRC) is our biggest competitor...and collaborator

The rise of the PRC's prominence in S&E is transformative, and U.S. leadership is no longer a given. It began with rising, sustained funding of R&D – and those investments are bearing fruit. The PRC has surpassed the U.S. in international patents and is a formidable competitor in technology areas critical to national security – including artificial intelligence, semiconductors, quantum computing, and biotechnology. The PRC now patents more than the U.S., including in fields like AI.

U.S. Research & Development

by source of funds: 1953-2022



Other

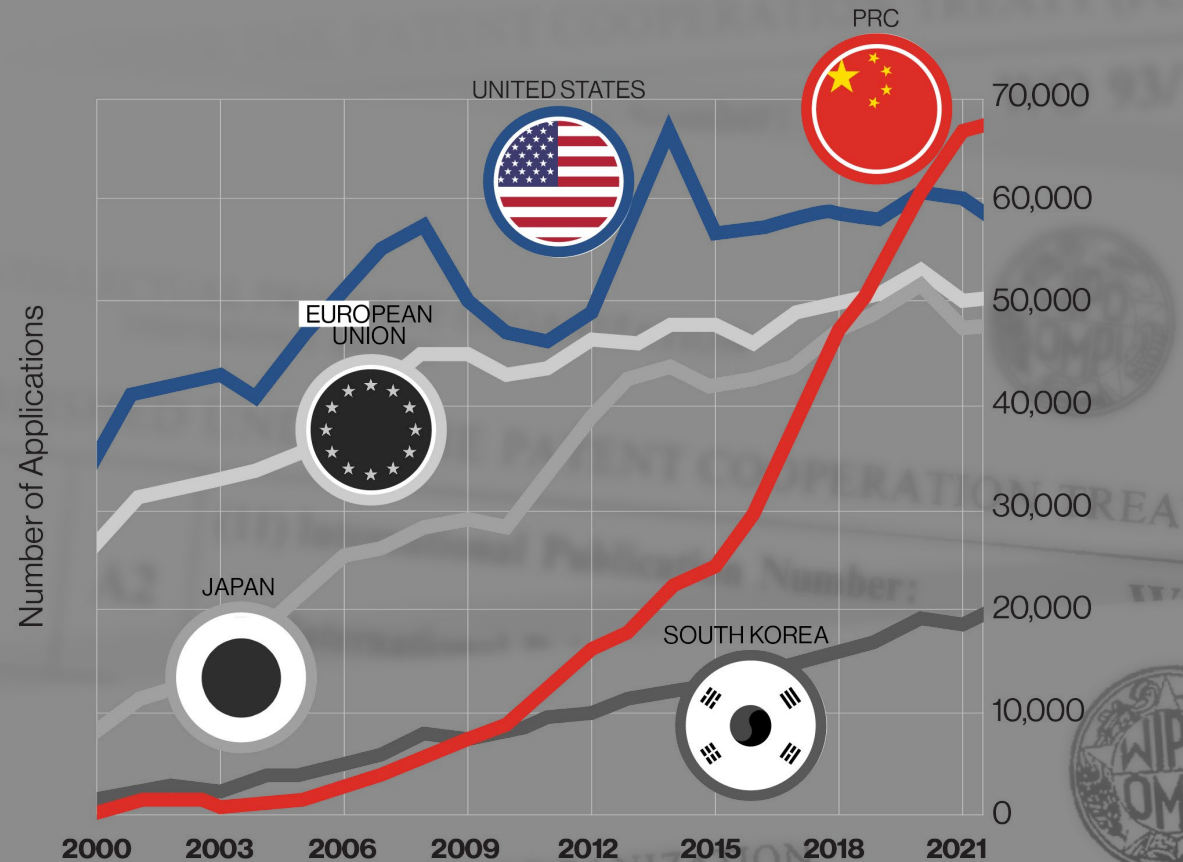
Higher education

Federal government

Business

Patent Cooperation Treaty Applications

by selected region, country, or economy: 2000–22



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Average Scores of U.S. Students in Grade 8 on the Main NAEP Mathematics Assessment

by race or ethnicity: 2000-22

