



Strategic Landscape and Emerging Challenges *Implications for NIST*

Outline For This Afternoon



- 1. Strategic Landscape and Emerging Challenges**
 - Dramatic Social Changes
 - Changing International S&T Landscape
 - Emerging Technology Challenges
- 2. How is NIST Addressing These Challenges? Steps Taken and Future Opportunities**
 - Update on NIST Strategic Plan
 - Plans for Strengthening Technology Transfer
 - The Expanding Importance of Partnerships in NIST Mission Delivery
 - Opportunities for NIST
- 3. Questions for the VCAT**

AFP



Societal Changes

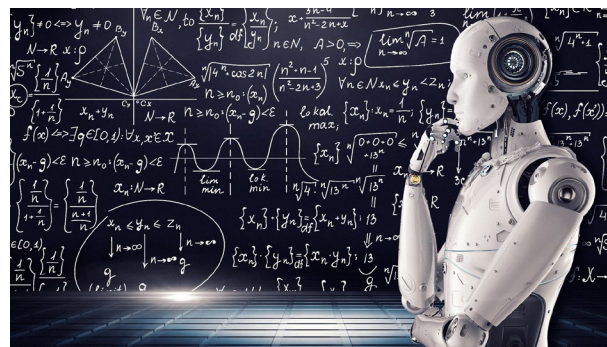


Geopolitical Landscape



Political and Policy Landscape

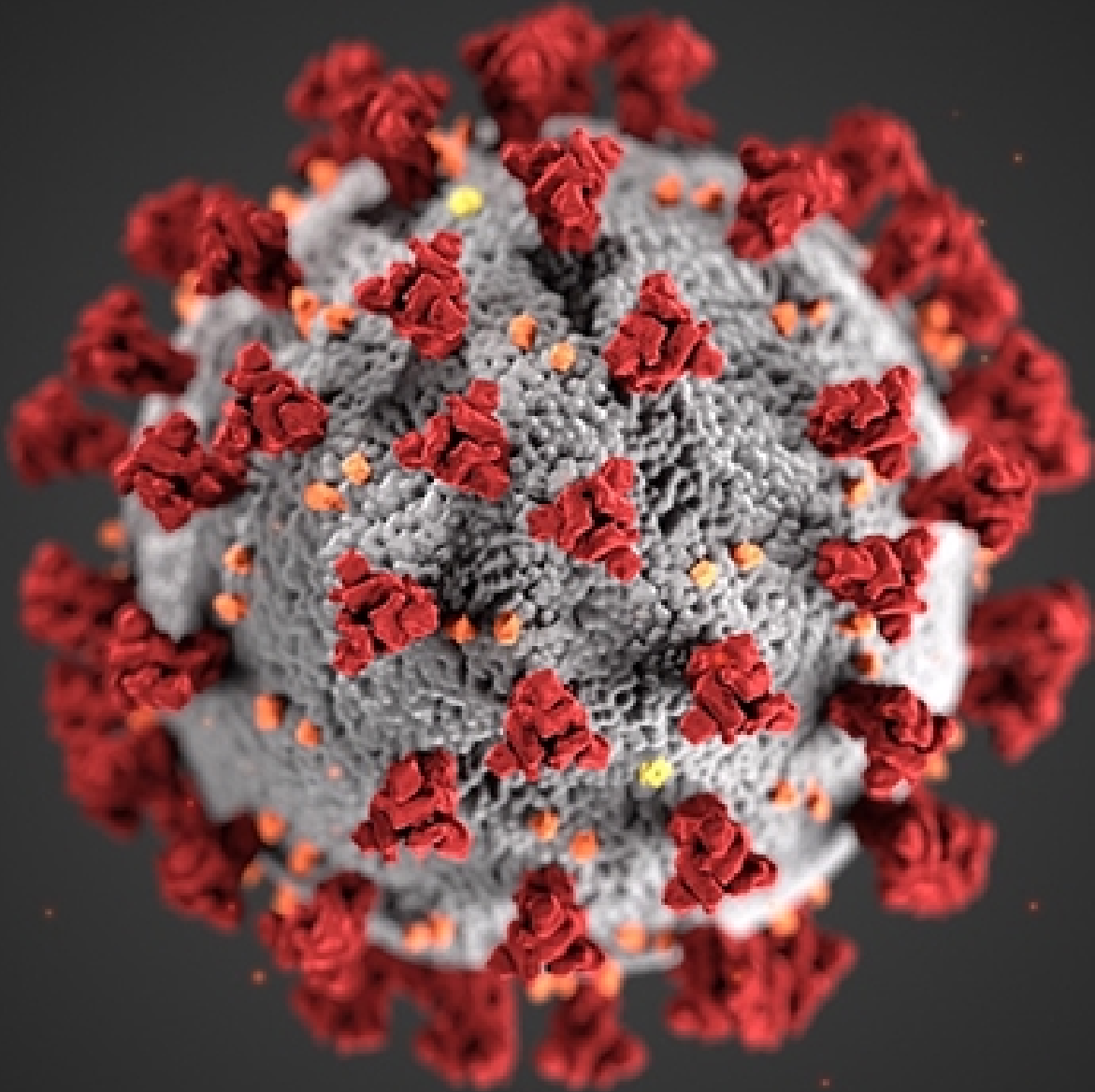
Creative Commons



Technology and Science Landscape

NIST Environmental Scan

Societal Changes – 2020 A Year of Maximal Disruption



Multigenerational Workforce
Social Inequality
Civil Unrest
Diversity and Inclusivity
Economic downturn
Partisanship
Distrust

Photo CDC/Allisa Eckert

Economic Impact

- Recession
- Stress on Federal, State, and Local Budgets
- Bankruptcies, Unemployment
- Disruption of supply chains

Societal Impact

- Telework and virtualization of meetings
- Magnification of socio-economic divide
- Politicization of Science
- Catalyst for new technological innovation

Ramifications for NIST

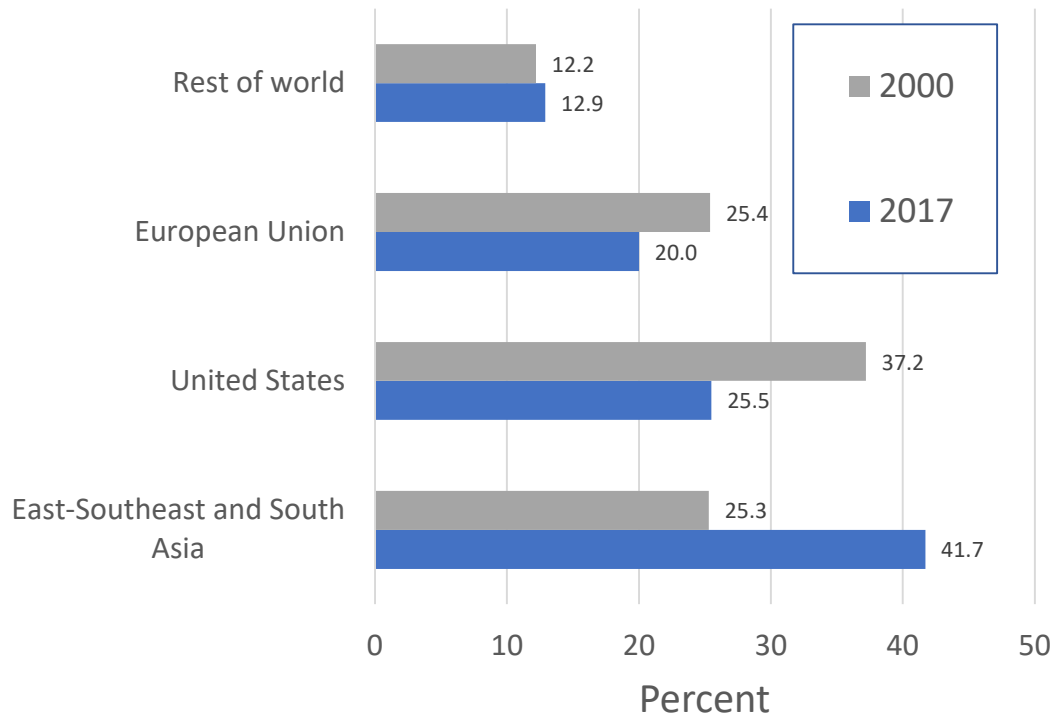
- Pressure on solvency
- Infrastructure degradation
- Lapse in mission delivery
- Procurement of supplies
- Workforce changes
- External partnerships
- New opportunities

Changing International S&T Landscape: America's S&T Lead is at Risk

Increased foreign funding of R&D

- U.S. share of global R&D decreasing, with China the fastest growing nation

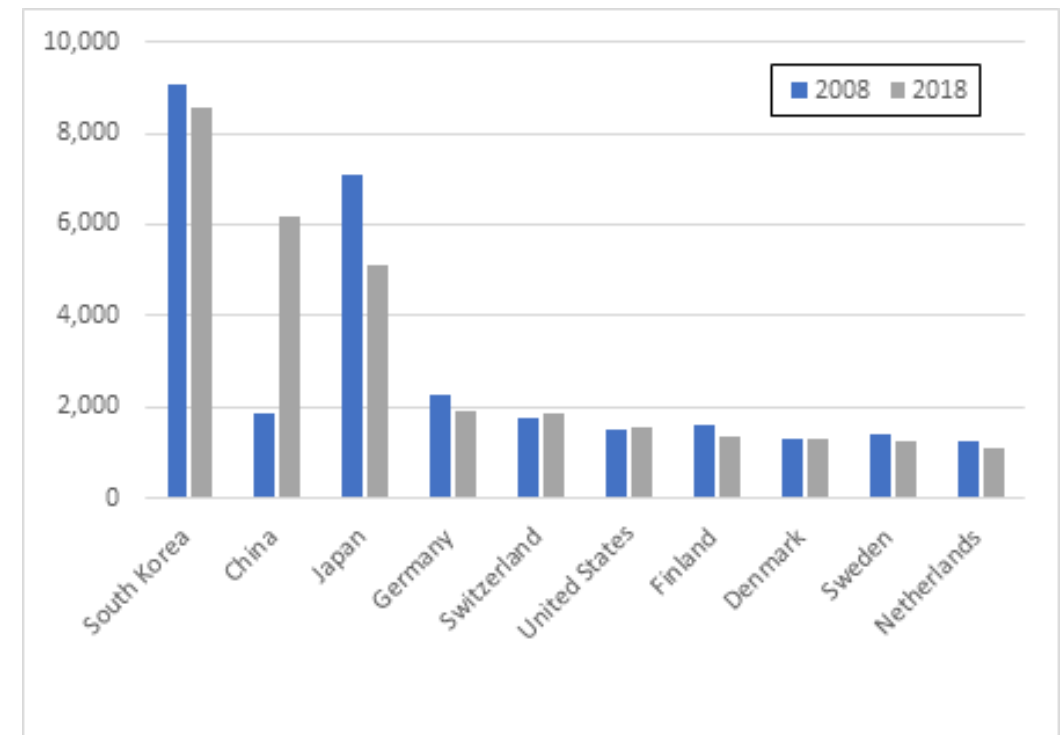
Shares of Worldwide R&D



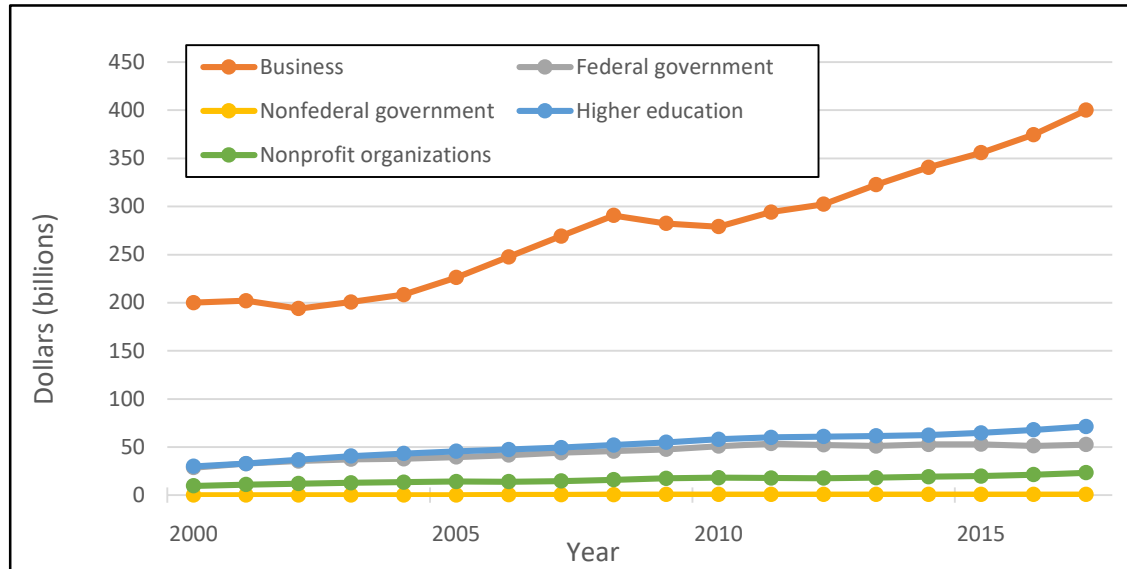
Industrial policies and tech focus of other nations

- Technology prioritization, policies for 5G, quantum R&D, manufacturing, standards, with China accelerating in patents and more

Patent Activity Worldwide



Funding Landscape



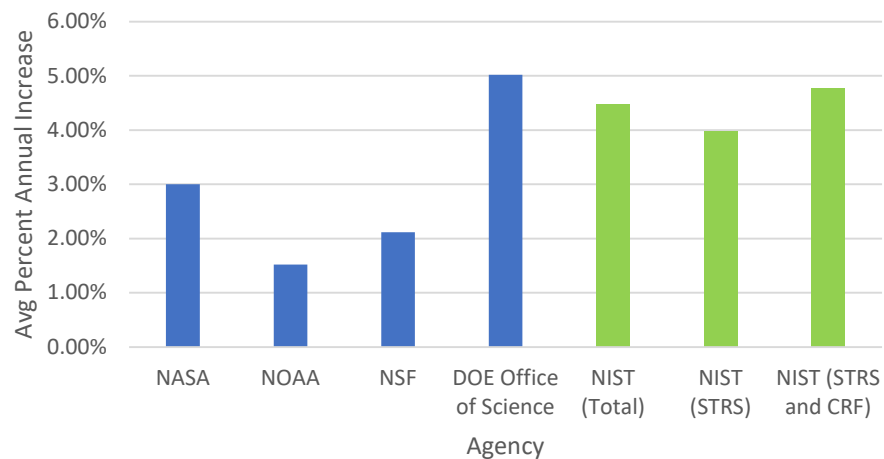
Industry provides majority of R&D Funding in U.S.

Federal Government still the biggest funder of basic R&D.

Overall Federal Investment flat or declining.

NIST budget growth tracks with that of other non-Defense S&T agencies on a percent basis

Average Percent Annual Increase (2012-2019)





Technology and Science Drivers

Security

Privacy

Sustainable Innovation

Health

Data

Advanced Manufacturing

Advanced Communications

Drones and Autonomous Vehicles

Human Augmentation

Space

Workforce

- Telework and remote work
- Diversity, inclusivity, and equity
- Agility and collaboration
- Foreign national guest researchers
- Trust of the workforce

Operational Environment and Mission Delivery

- Funding
- How NIST delivers on its mission
- Increased demand for NIST engagement
- Partnerships and ability to work closely with industry
- International Dynamics