NIST's Efforts to Support America's Competitiveness in the Global Economy

Visiting Committee on Advanced Technology

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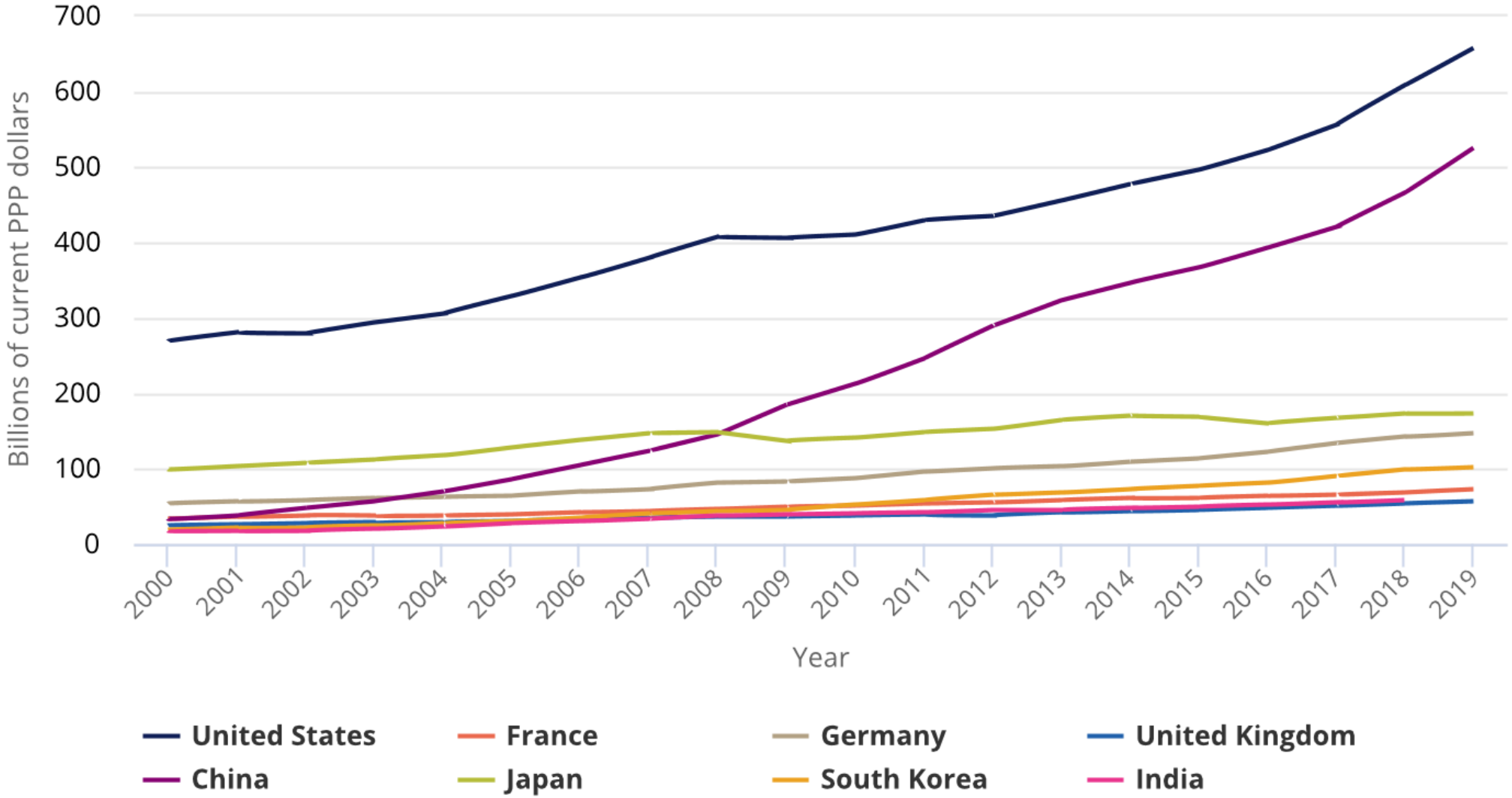
Gross Domestic Expenditures on R&D (2000-19)

National Center for Science and Engineering Statistics (NCSES), *The State of U.S. Science and Engineering 2022*



PPP = purchasing power parity. Data are for the top 8 R&D-performing countries. Data are not available for all countries for all years.

Priorities

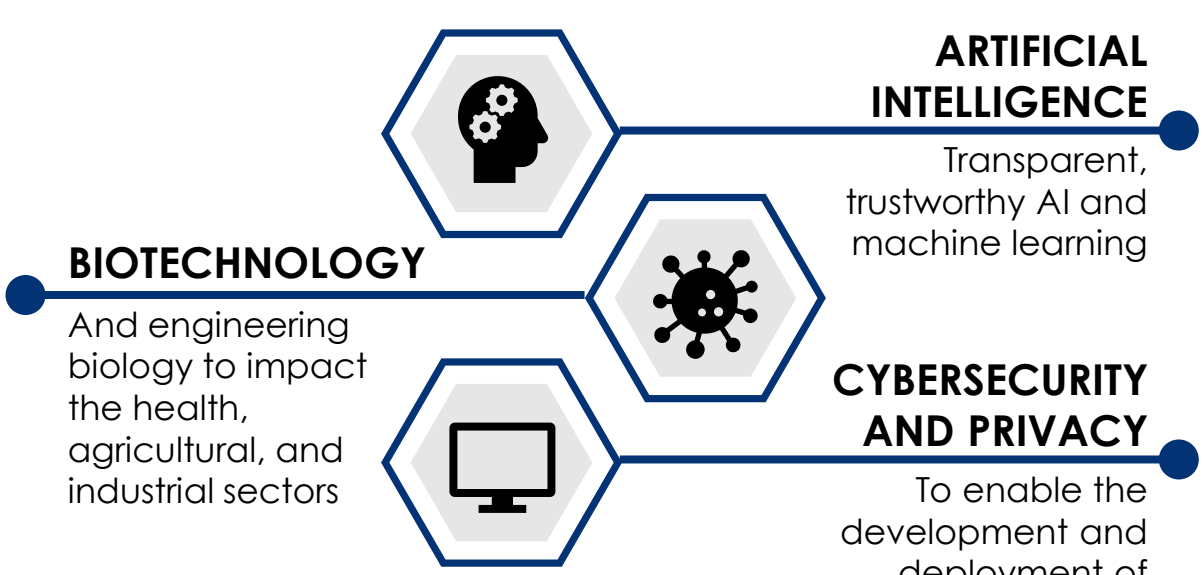
1. Critical & Emerging Technologies Leadership
2. Standards Leadership
3. Manufacturing Leadership
4. Mission Delivery Enhancement
5. NIST Community Building

Critical & Emerging Technologies Leadership

J. Stoughton/NIST

NIST is essential in the development, manufacture, and adoption of technologies critical today and those those yet to be imagined.

Critical & Emerging Technologies



ARTIFICIAL INTELLIGENCE

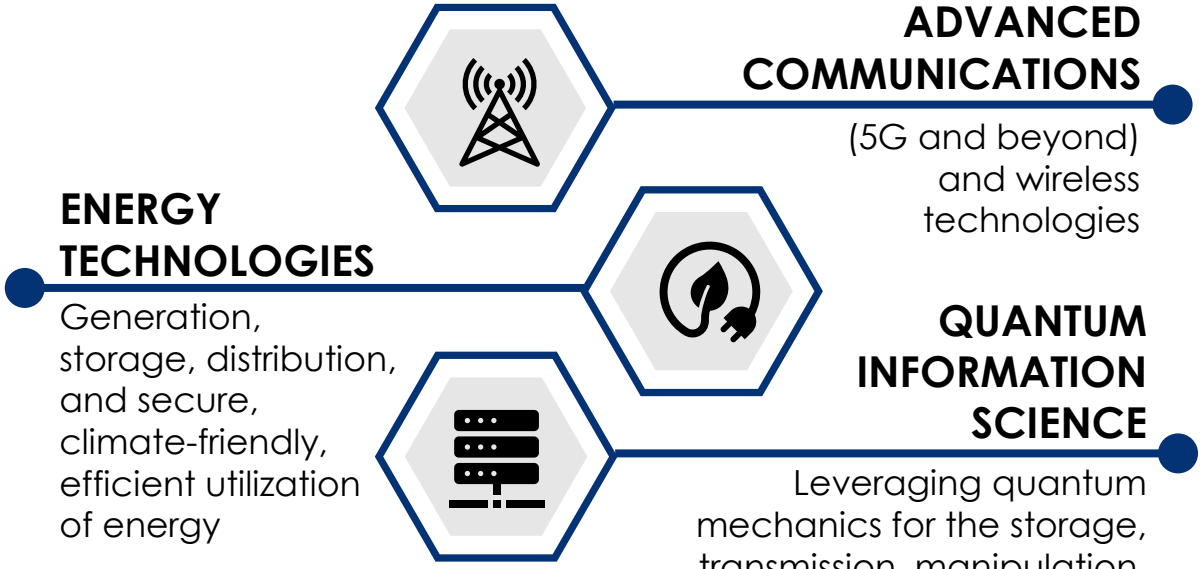
Transparent, trustworthy AI and machine learning

BIOTECHNOLOGY

And engineering biology to impact the health, agricultural, and industrial sectors

CYBERSECURITY AND PRIVACY

To enable the development and deployment of emerging technologies



ADVANCED COMMUNICATIONS

(5G and beyond) and wireless technologies

ENERGY TECHNOLOGIES

Generation, storage, distribution, and secure, climate-friendly, efficient utilization of energy

QUANTUM INFORMATION SCIENCE

Leveraging quantum mechanics for the storage, transmission, manipulation, computing, or measurement of information

Critical & Emerging Technologies Leadership

Motivations

- The global economic landscape is rapidly changing; US is poised to lose its leadership position

Challenges

- The US has an innovation ecosystem that is market driven and bottom up. Our biggest competitor has an innovation ecosystem that is top down and autocratic. Rules are different.

Opportunities

- NIST is a strong collaborator and has the trust of industry, academia and government
- NIST works across the continuum from basic to applied research to manufacturing to standards
- We have led programs that have driven new industries throughout our history including most recently in quantum

Blakestad/NIST

Standards Leadership

erstock/Anton Balazh

NIST leads execution of the U.S. Government's National Standards Strategy for Critical and Emerging Technology and the development of Federal standards policy to ensure continued U.S. global economic competitiveness and technology leadership.

International Standards Leadership

Motivations

- National security priority of the Biden-Harris Administration and Congress
- New strategies released by China and the EU

Challenges

- Scoping USG role in our private sector-led system
- Public sector vs. private sector concerns
- Limited NIST resources and other agency encroachment

Opportunities

- Proactive allies in new fora (TTC, Quad, IPEF, APEP, etc.) aimed at addressing international standards
- Commerce is motivated to act
- NIST has USG convening power

Manufacturing Leadership

NIST is industry's one stop shop for practical tools, services, and measurement expertise to accelerate competitiveness and impact.

CHIPS Act

Position the Department of Commerce to successfully execute CHIPS Act Programs if the Bipartisan Innovation Act is funded

Intel

Manufacturing: CHIPS Act

Motivations

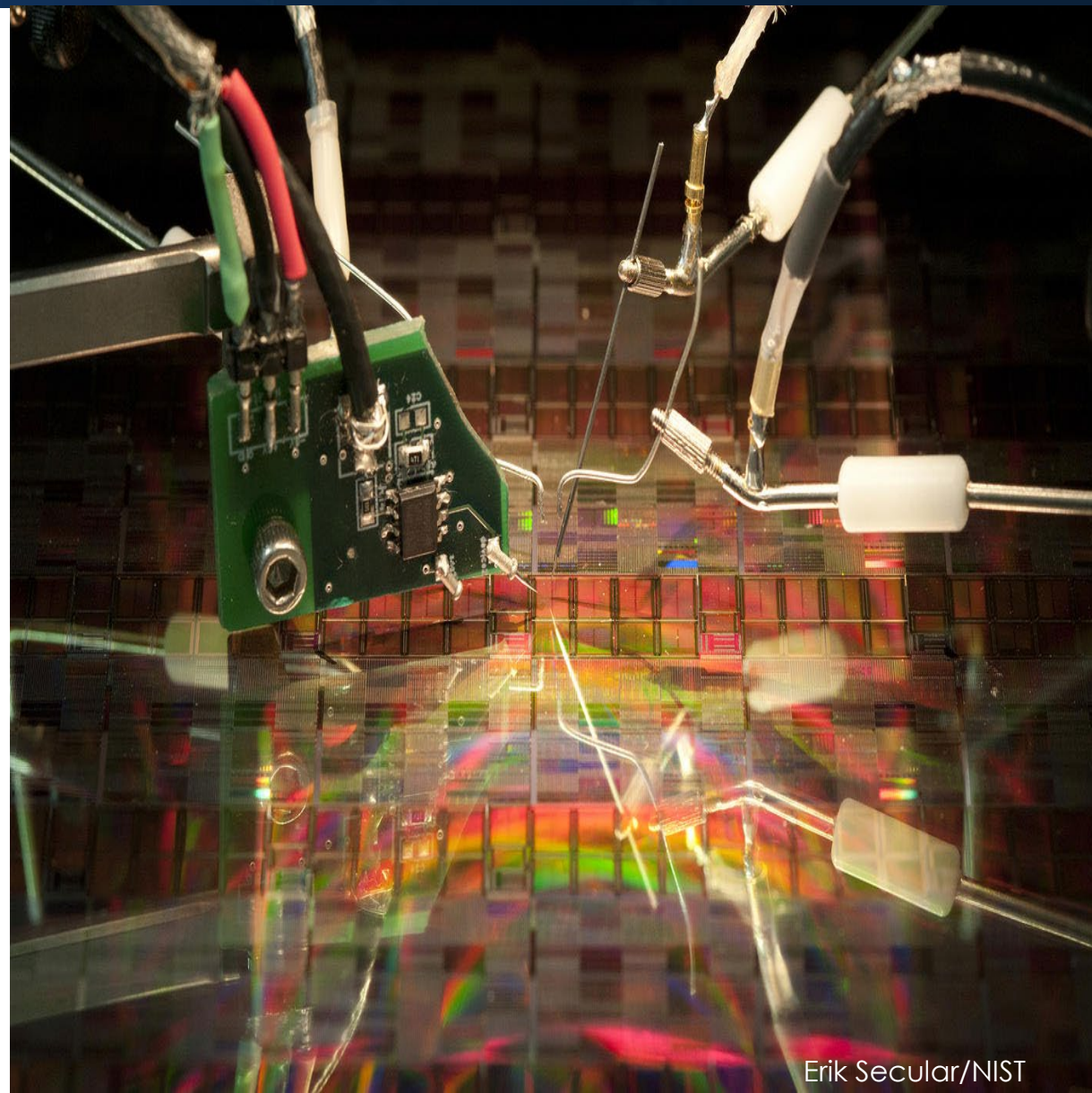
- An Administration and Congressional priority to solve the semiconductor supply chain issue
- The US produces just a fraction of the semiconductor chips that it uses annually and has no capacity to manufacture the most advanced chips

Challenges

- Complex program that will swamp NIST's budget
- High visibility with multiple pieces- incentives and research
- Need quick wins

Opportunities

- Secretary's priority and Department is all in
- We know industry
- We have a reputation of being fair and trusted



Erik Secular/NIST

Alignment Across NIST Directorates

Laboratories

- Communications Technology
- Engineering
- Information Technology
- Material Measurement
- NIST Center for Neutron Research
- Physical Measurement

Services & Resources

- Measurement Services

Extramural Programs

- Manufacturing Extension Partnership (MEP)
- Manufacturing USA

Manufacturing: Alignment of NIST programs

Motivations

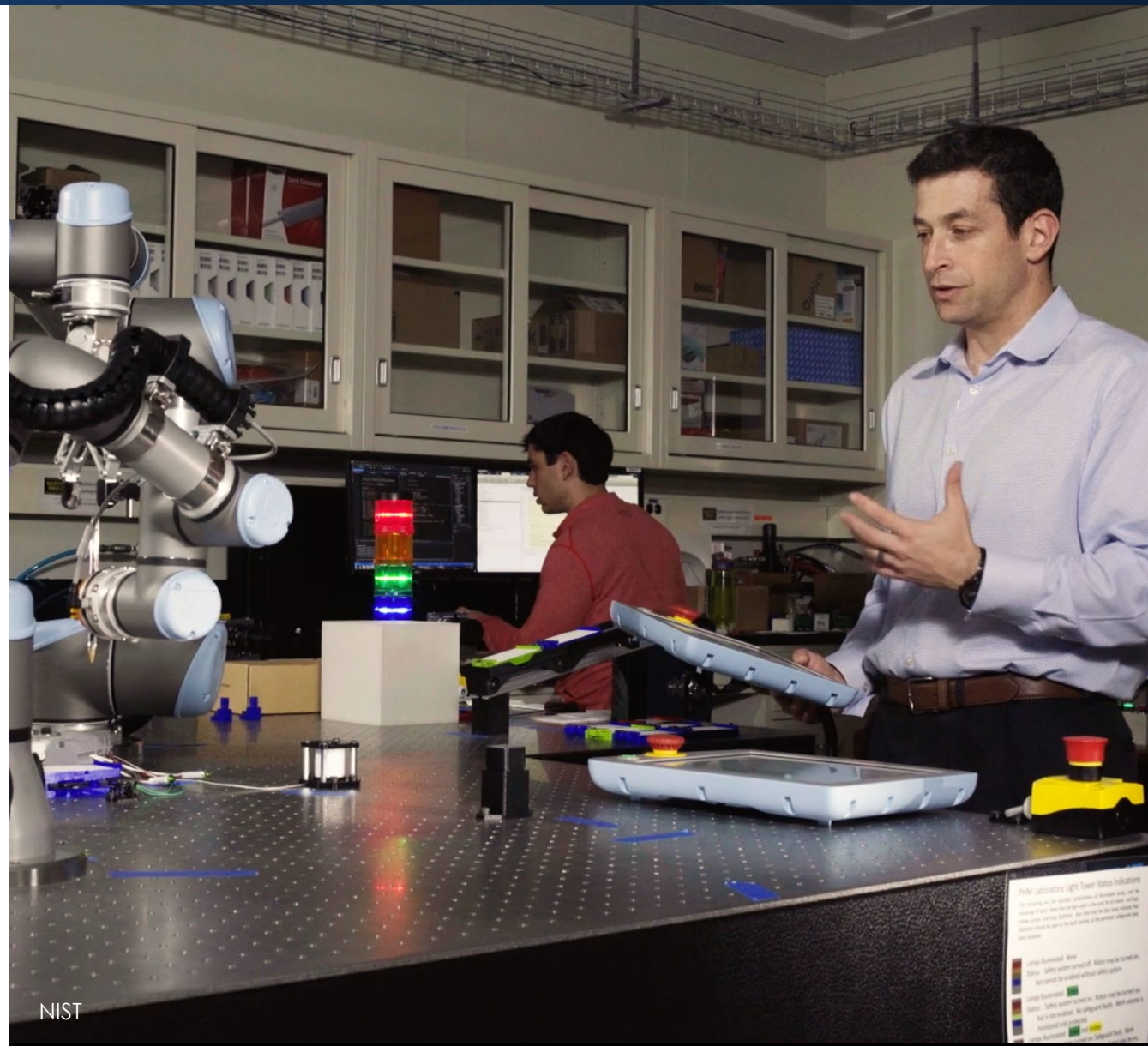
- An Administration and Congressional priority to bring manufacturing back home and to solve supply chain issues

Challenges

- Intramural programs and extramural programs have largely been siloed and not coordinated

Opportunities

- NIST has partnered with manufacturers since the beginning and has strong intramural and extramural programs
- Accelerate the transition from R&D to manufacturing
- Deliver lab outputs to the factory floor
- Make NIST resources as accessible as possible to industry



Mission Delivery Enhancement

NIST engages with Congress, key policy makers, and the general public to ensure support and adequate funding for NIST's impactful mission in economic competitiveness.

Mission Delivery Enhancement

Motivations

- We want to be fully resourced for the big mission that we have at at time when global competitiveness is a priority for everyone

Challenges

- Flat funding
- Decaying buildings

Opportunities

- Opportunities to advance our agenda and work at the highest levels of government
- We are in every state with our internal and external programs

2 Campuses
8 Joint Research Institutes
3 Centers of Excellence
2 Atomic Clock Signal Stations
51 Manufacturing Extension Partnership
16 Manufacturing USA Institutes

NIST Community Building

NIST provides a community open to change, where everyone is valued, supported, engaged, and empowered.

NIST Community Building

Motivations

- To be the best place to work

Challenges

- Issues in diversity, equity, inclusion and accessibility
- NCNR and strengthening the cross-NIST program
- Bringing people back to campus post-COVID

Opportunities

- We have a chance to restart
- To become the exemplar of a safe, healthy and respectful work environment

Diversity, Equity, Inclusion, & Accessibility

Safety

Return to Campus

DISCUSSION