

If Measurement is the Answer, What is the Question?

Subra Suresh

Director
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Measuring the Impacts of Federal Investments in Research
National Academies of Sciences, April 19, 2011, Washington, DC

National R&D Expenditures and Share of World Total, by Region: 2007



(Billions of U.S. PPP Dollars)

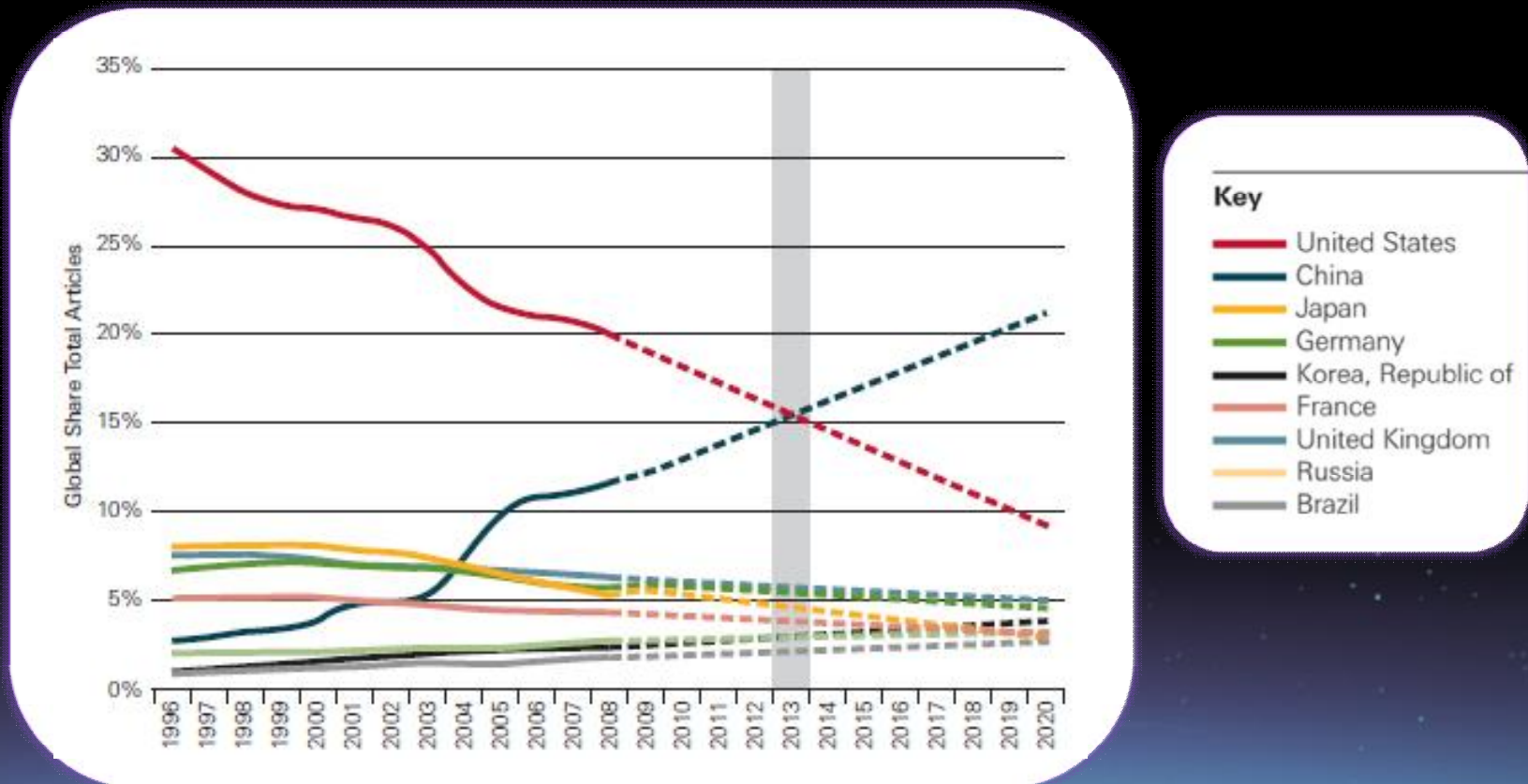


The Future?



Linear Extrapolation of Future Publication Trends Global Share of Total Articles

The dotted lines indicate projections



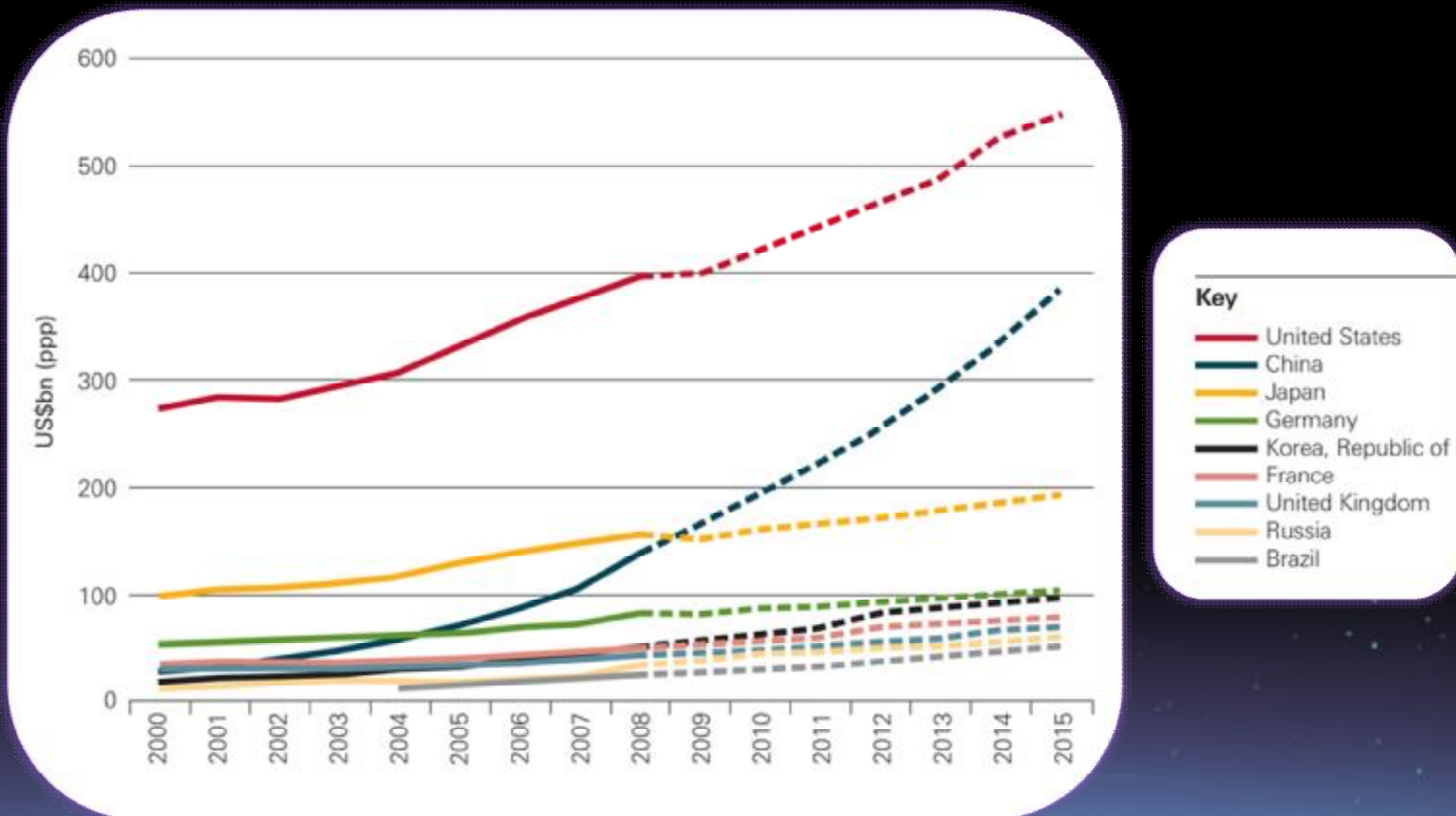
The Royal Society – “Knowledge, Networks and Nations”, 2011

R&D Spending Targets

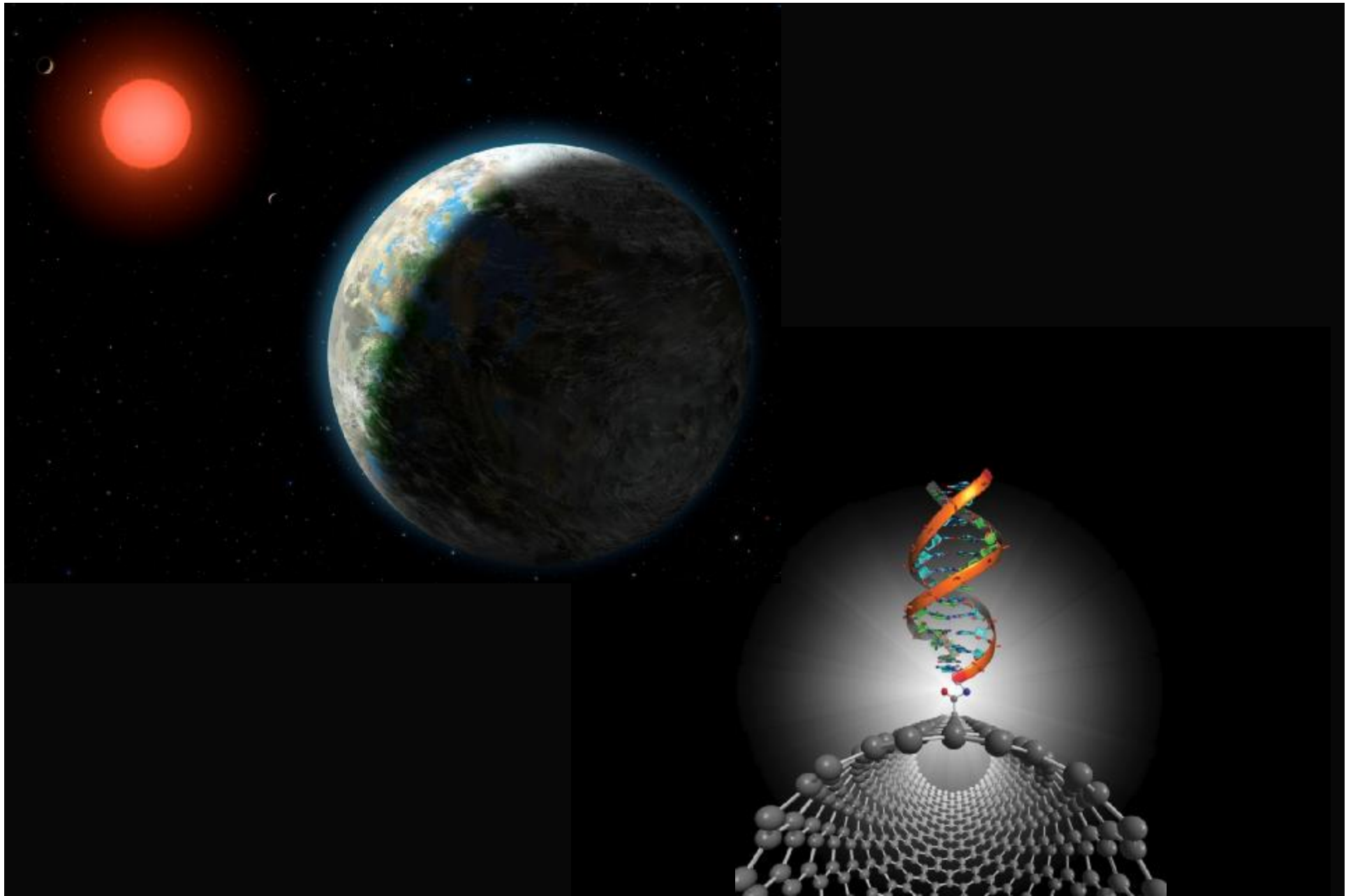


R&D Spending, Selected Countries 2000-2015

The dotted lines indicate projections based on announced targets



The Royal Society – “Knowledge, Networks and Nations”, 2011



New “Era of Observation”



New “Era of Data and Information”

Looking Ahead – Measurements in the context of



- Cyberinfrastructure
- Social Sciences
- Partnerships
- Human Capital Development
- “Innovation”



Cyberinfrastructure



Role in advancing measurement and assessment research

Need to store, integrate, sort, extract and archive information

Protecting the integrity of the scientific process

Accelerating discovery

Level the playing field within society and across the globe

Important tools for decision making by governments

Open access, real-time data networks

STARMetrics

Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21)

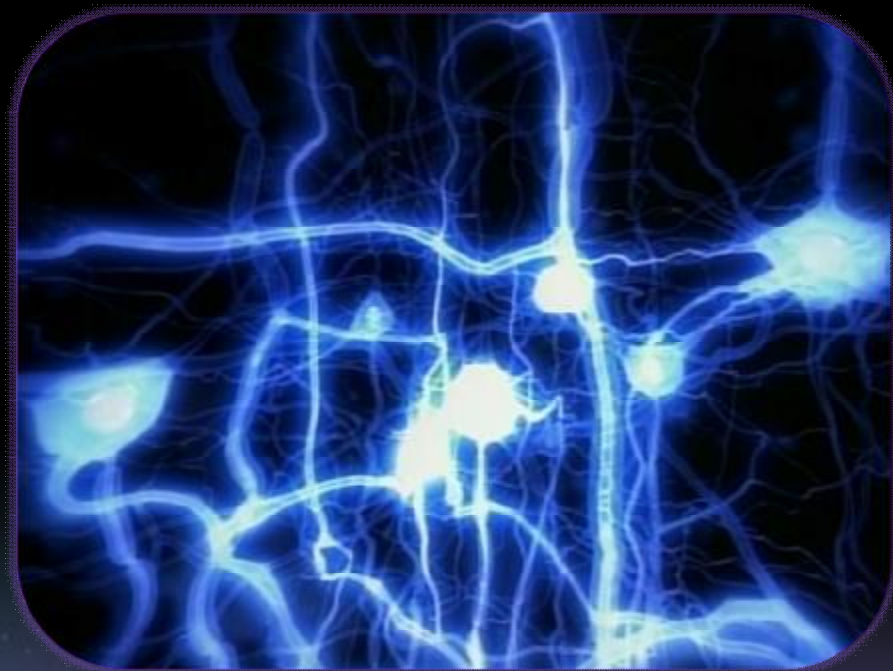


Enabling new ways
of doing science
and education



Computational and data-enabled science and engineering
(CDS&E)

Research in the Social Sciences



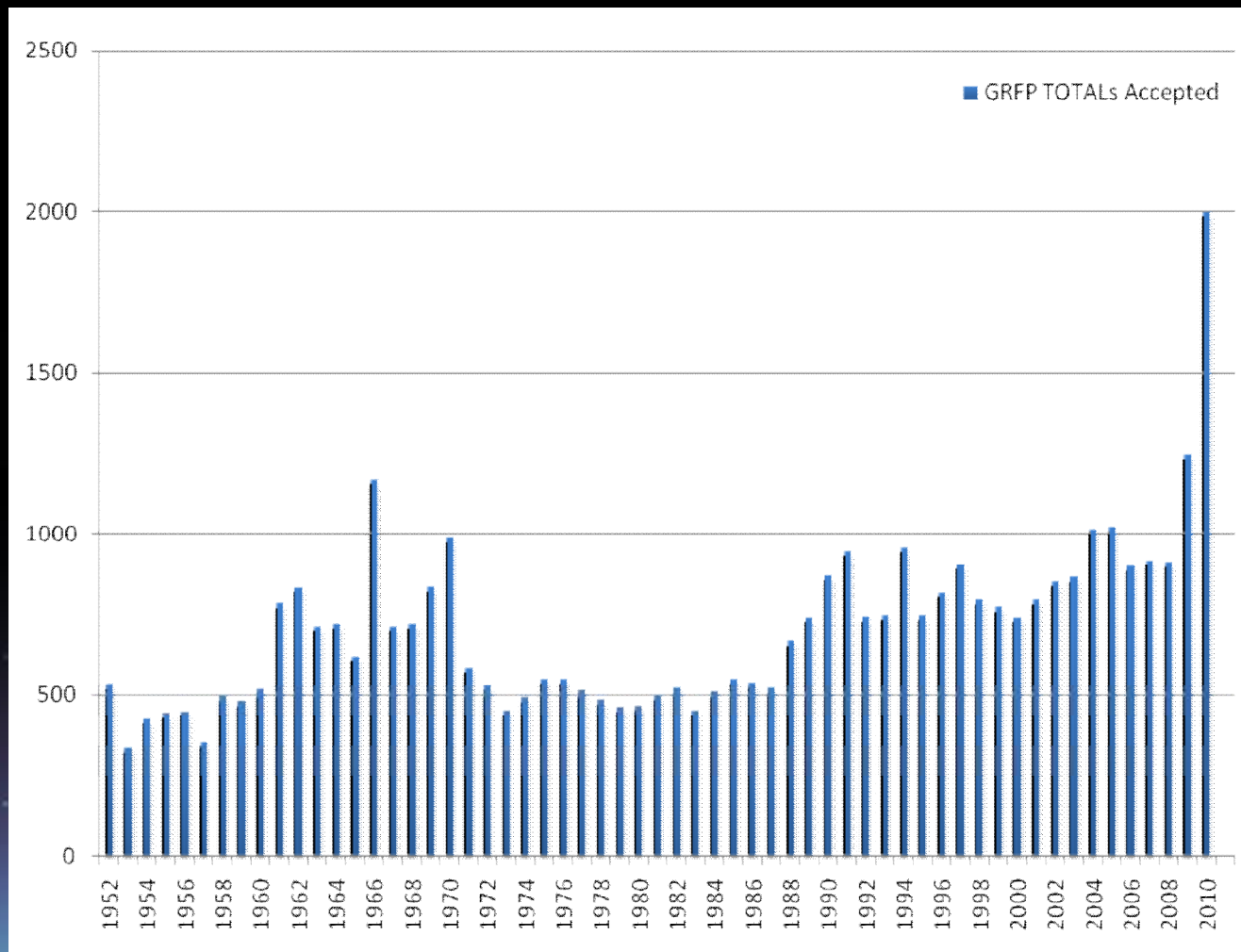
New Partnerships and Collaborations



Data-sharing among agencies, public-private partnerships

International standards and practices for measurement of impact

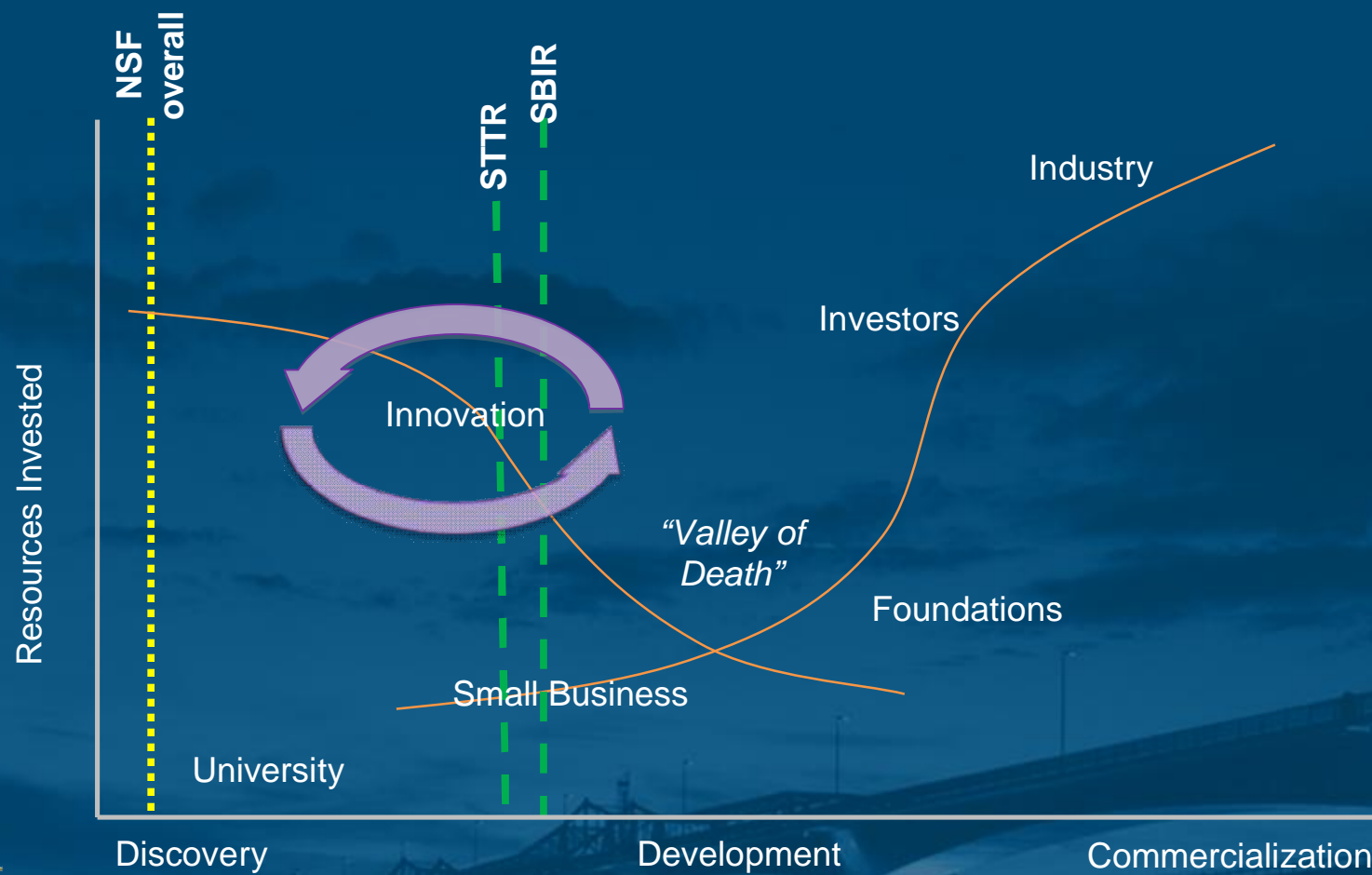
Number of NSF Graduate Research Fellowships



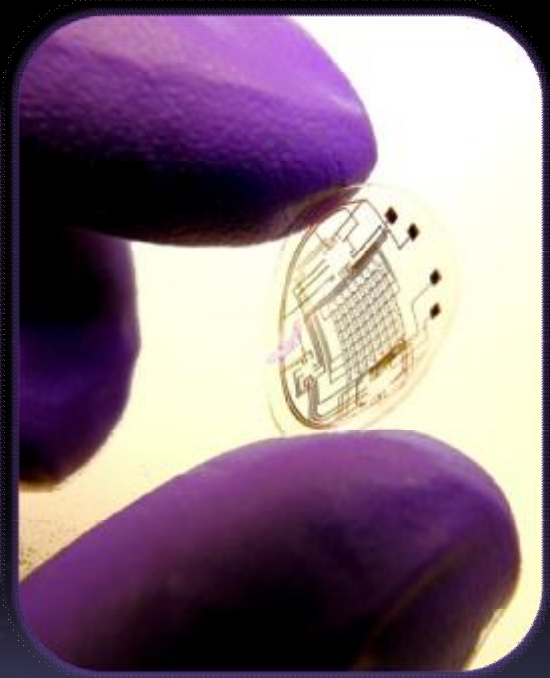
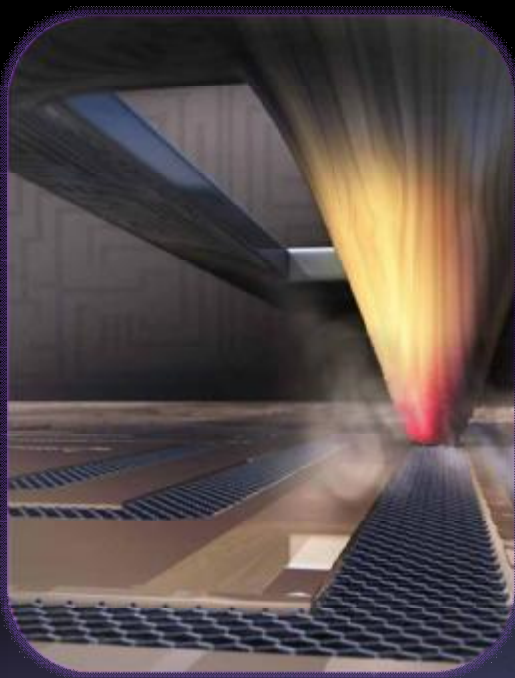
Fundamental Research as fuel for market-viable innovation

Small Business Innovation Research (SBIR)

and Small Business Technology Transfer (STTR)



INSPIRE: Integrated NSF Support Promoting Interdisciplinary Research and Education



Merit review system and the assessment of its effectiveness

Looking Ahead



- Cyberinfrastructure
- Social Sciences
- Partnerships
- Human Capital Development
- Measuring and quantifying “innovation”



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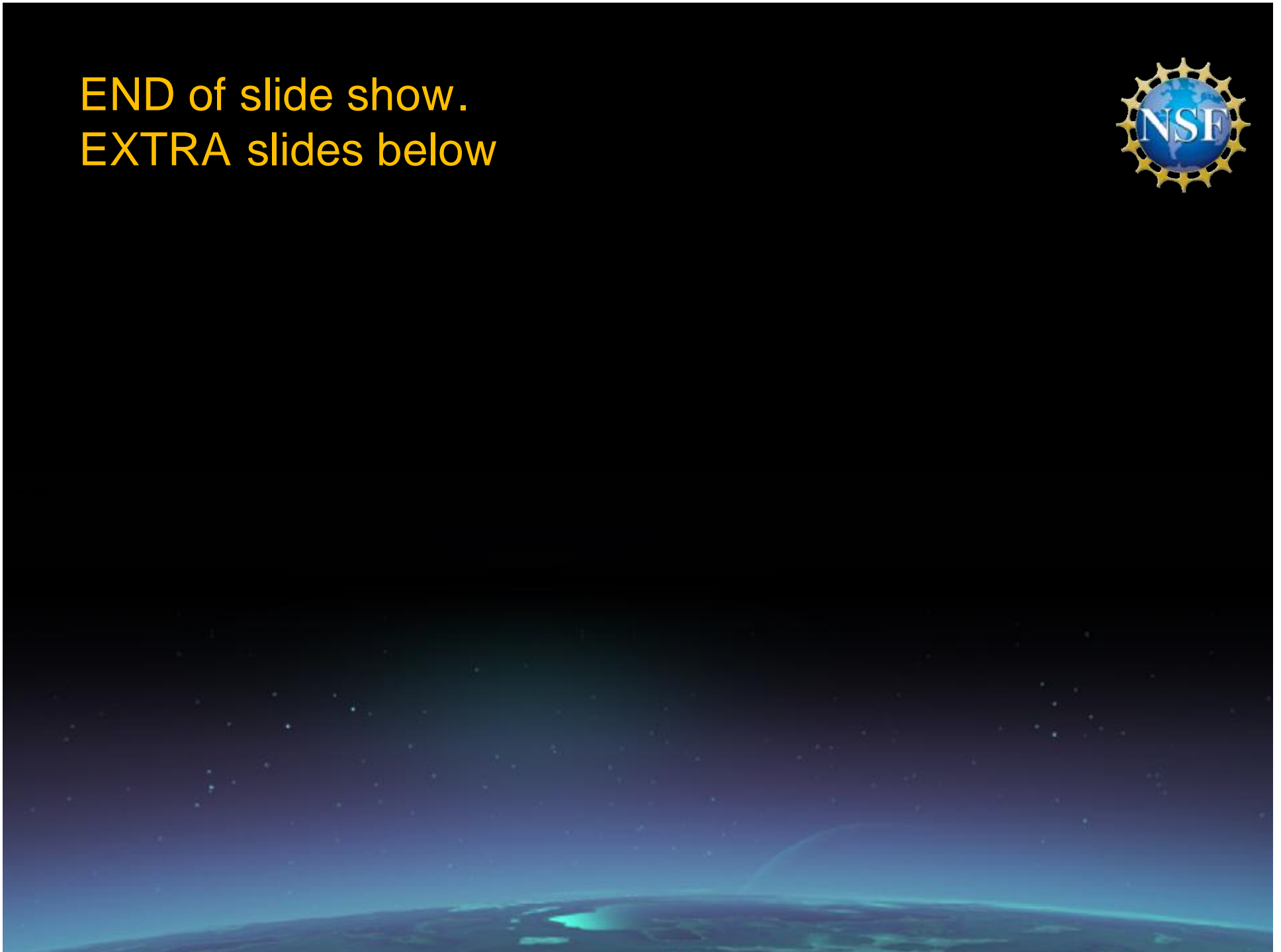
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END of slide show.
EXTRA slides below



Global Citations by Country

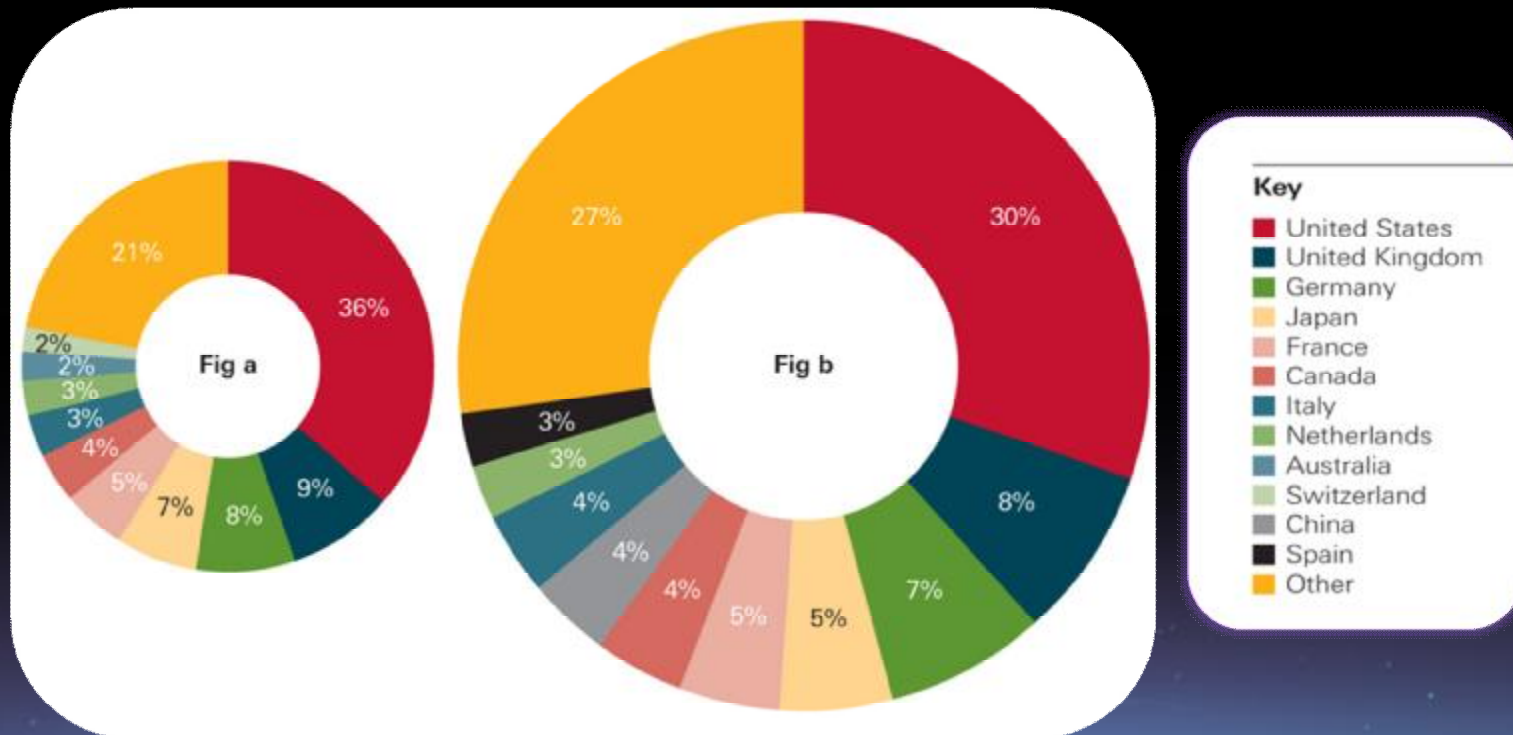


Comparative Proportion of Global Citation by Country

The top ten cited countries in each period are shown.

Fig a. 1999-2003

Fig b. 2004-2008



Global Publication Authorship by Country



Proportion of Global Publication Authorship by Country

The top ten producing countries in each period are shown.

Fig a. 1999-2003

Fig b. 2004-2008

