

MAKING A FEDERAL CASE FOR COMPUTING

Peter Harsha

Director of Government Affairs

CRA

Snowbird Conference 2014

CRA GOVERNMENT AFFAIRS



Me



Brian Mosley
Policy Analyst

Please tell me how you would rate the honesty and ethical standards of people in these different fields – very high, high, average, low, or very low? First, ... Next, ... [RANDOM ORDER]

Nov. 30-Dec. 2, 2007

	Very high/ High	Average	Low/ Very low	No opinion
	%	%	%	%
Nurses	83	15	1	1
Grade-school teachers	74	20	4	1
Druggists/Pharmacists	71	26	3	1
Military officers	65	28	5	2
Medical doctors	64	29	7	*
Clergy	53	33	10	3
Policemen	53	38	9	*
Judges	46	41	12	1
Day-care providers	44	43	7	5
Bankers	35	49	15	*
Auto mechanics	25	56	17	2
TV reporters	23	49	26	1
Newspaper reporters	22	52	26	1
Nursing home operators	21	50	25	4
Local officeholders	20	56	23	1
Lawyers	15	49	35	1
Business executives	14	54	30	2
State officeholders	12	55	33	1
Congressmen	9	45	45	1
Advertising practitioners	6	46	42	5
Car salesmen	5	39	53	2
Lobbyists	5	33	58	4

* Less than 0.5%

GALLUP POLL



CRA

Computing Research
Association

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GALLUP POLL



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Association



Political



Working



Groups



Examples



CRA COMMITTEE ON GOVERNMENT AFFAIRS

Fred Schneider, Cornell – Chair

Ed Lazowska, Washington and Jeff Vitter, Kansas – Co-Chairs

Sarita Adve, Illinois

Annie Antón, GeorgiaTech

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Wayne Bennett, ECEDHA

George Cybenko, Dartmouth

Mary Fernández, MentorNet

James Foley, GeorgiaTech

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Mary Jane Irwin, Penn State

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John King, Michigan

Dan Reed, Iowa

Bobby Schnabel, Indiana

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Eugene H. Spafford, Purdue

Valerie Taylor, Texas A&M

David Tennenhouse, VMWare

Jeannette M. Wing, Microsoft



1. WHY DOES CRA DO POLICY?

- 
- 1. WHY DOES CRA DO POLICY?**
 - 2. THE CHALLENGES WE FACE**

- 
- 1. WHY DOES CRA DO POLICY?**
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WHY DO WE “DO” POLICY?

CRA MISSION

CRA's mission is to enhance innovation by joining with industry, government and academia to strengthen research and advanced education in computing.

CRA executes this mission by leading the computing research community, informing policymakers and the public, and facilitating the development of strong, diverse talent in the field.

COMPUTING RESEARCH ASSOCIATION

We're part of an active computing policy community

- ACM Ed Policy/USACM
- code.org, Computing in the Core
- IEEE-CS/IEEE-USA
- SIAM
- CASC
- EDUCAUSE
- AAAI
- NCWIT
- Industry Groups
- EFF, EPIC, CDT...

“ENSURING THE HEALTH OF THE R&D ECOSYSTEM”

- Access to Talent
- Impediments to Research
- Research Funding and Priorities

...Money

An Achievable Dream Inc
 Andre Agassi Charitable Foundation
 Appalachia Service Project
 Aquarium of the Pacific
 Arison Family Trust
 Arizona Science Center
 Asphalt Green
 Assn for Homeowners Across America
 Assn of Critical Care Transport
 Assn of Fundraising Professionals
 Attic Correctional Services
 August Wilson Cntr/African Amer Culture
 Austin Hill Country Conservancy
 Benetech Initiative
 Big Brothers/Big Sisters of America
 Bipartisan Advocacy Center
 Bipartisan Policy Center
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 Boston Museum of Fine Arts
 Boston Museum of Science
 Boy Scouts of America
 Boys & Girls Clubs of America
 Boys & Girls Town of Missouri
 Boysville
 Brooklyn Botanical Garden
 California Academy of Sciences
 California Center for Land Recycling
 California Science Center Foundation
 CARE Action Now
 Care Coalition
 Career Gear
 Carnegie Institute
 Carnegie Library of Pittsburgh
 Center for Civic Education
 Center for Individual Freedom
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 Chadd Inc
 Chicago Botanic Garden
 Chicago Zoological Society
 Children's Discovery Museum of San Jose
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Discovery Science Center
 Duane Morris Government Affairs
 Duluth Children's Museum
 ECMC Group
 Envision
 Families of Flight 93
 Federation of State Humanities Council
 Fermi Research Alliance
 Field Museum
 Figge Art Museum
 Fight Crime: Invest In Kids
 First Candle
 Folger Shakespeare Library
 Fort Wayne Allen County Economic
 Foundation for a Better Oregon
 Fraternal Order of Eagles
 Friends of Charities Assn
 Friends of the Griffith Observatory
 Friends of the World Food Program
 From the Top
 Future of Music Coalition
 GAVI Fund
 Georgian Bay Forever
 Girl Scouts of the USA
 Go for Broke National Education Center
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 Green for All
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 Hillside Family of Agencies
 Homeownership Preservation Foundation
 HONORreform
 Houston Advanced Research Center
 Houston Zoo
 Immunodeficiency Foundation
 Independent Sector
 Institute for Student Achievement

Miami Project to Cure Paralysis
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Lobbying Expenditures

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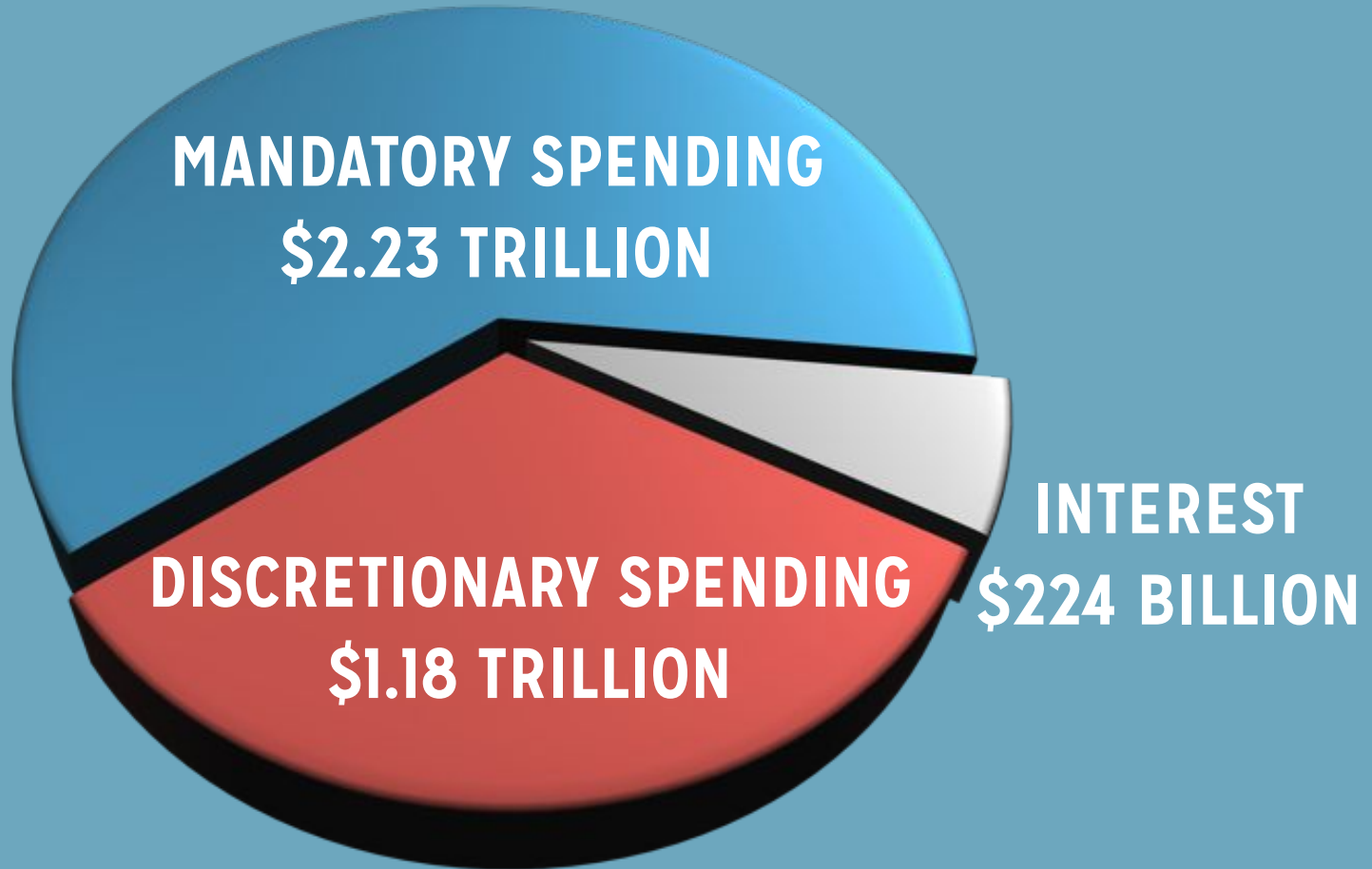
417

FY 2014 FEDERAL BUDGET



\$3.6 TRILLION

FY 2014 FEDERAL BUDGET



FY 2014 FEDERAL BUDGET



FY 2014 FEDERAL BUDGET



FY 2014 FEDERAL BUDGET



FY 2014 FEDERAL BUDGET



Agriculture

CJS

Defense

Energy and Water

Financial Services

Homeland Security

Interior and Environment

Labor/HHS/Education

Legislative Branch

Military/Veterans

State/Foreign Ops

Transportation/HUD

APPROPRIATIONS IS A ZERO-SUM GAME

Commerce, Justice, Science Bill

- National Science Foundation
- NIST
- NOAA
- NASA
- FBI / Dept. of Justice
- Census

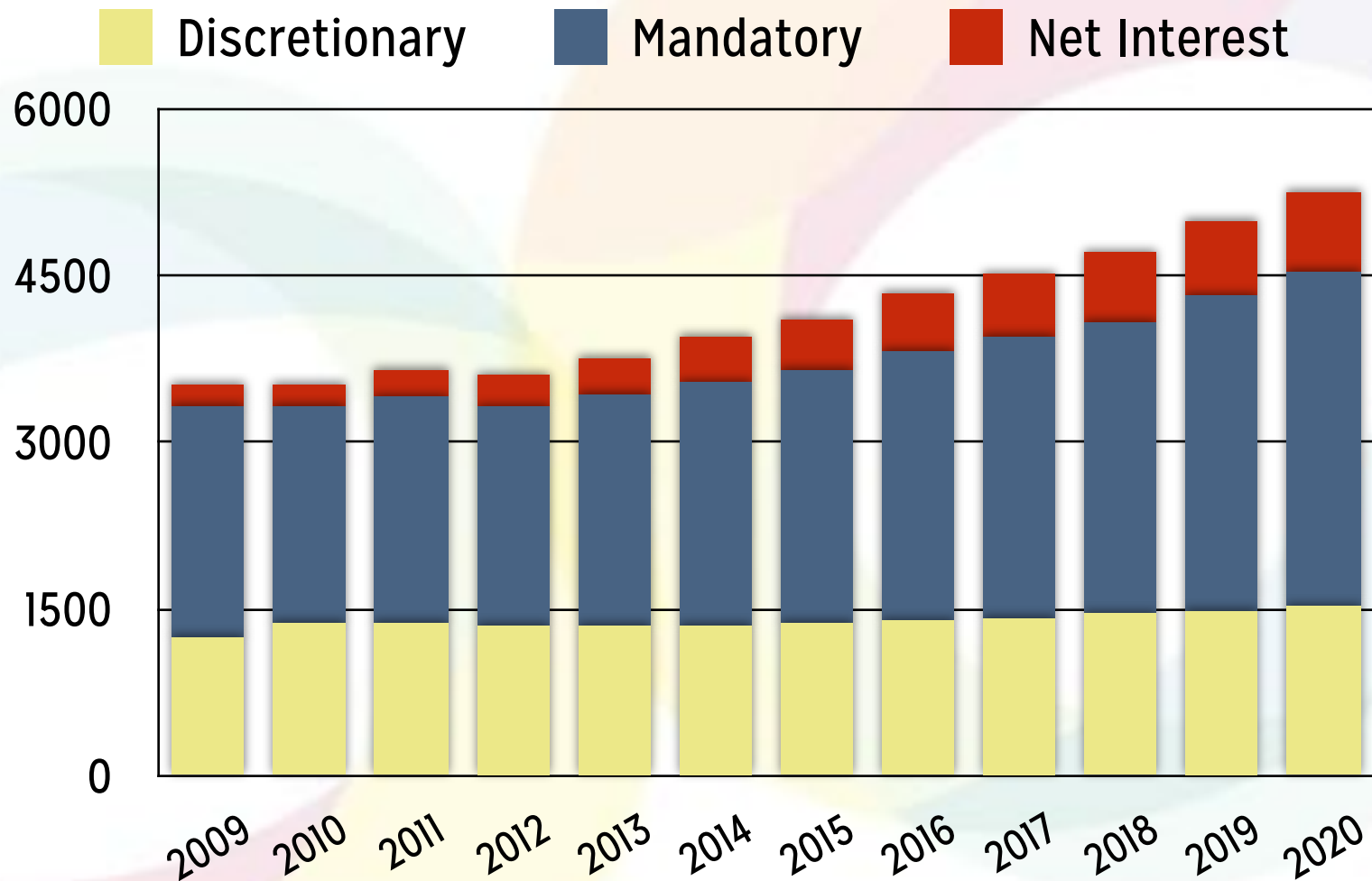
NSF, COPS OR SPACESHIPS?



THE CHALLENGES WE FACE

FISCAL REALITIES...

Growth in Mandatory Spending vs. Discretionary



Running the government on 8¢

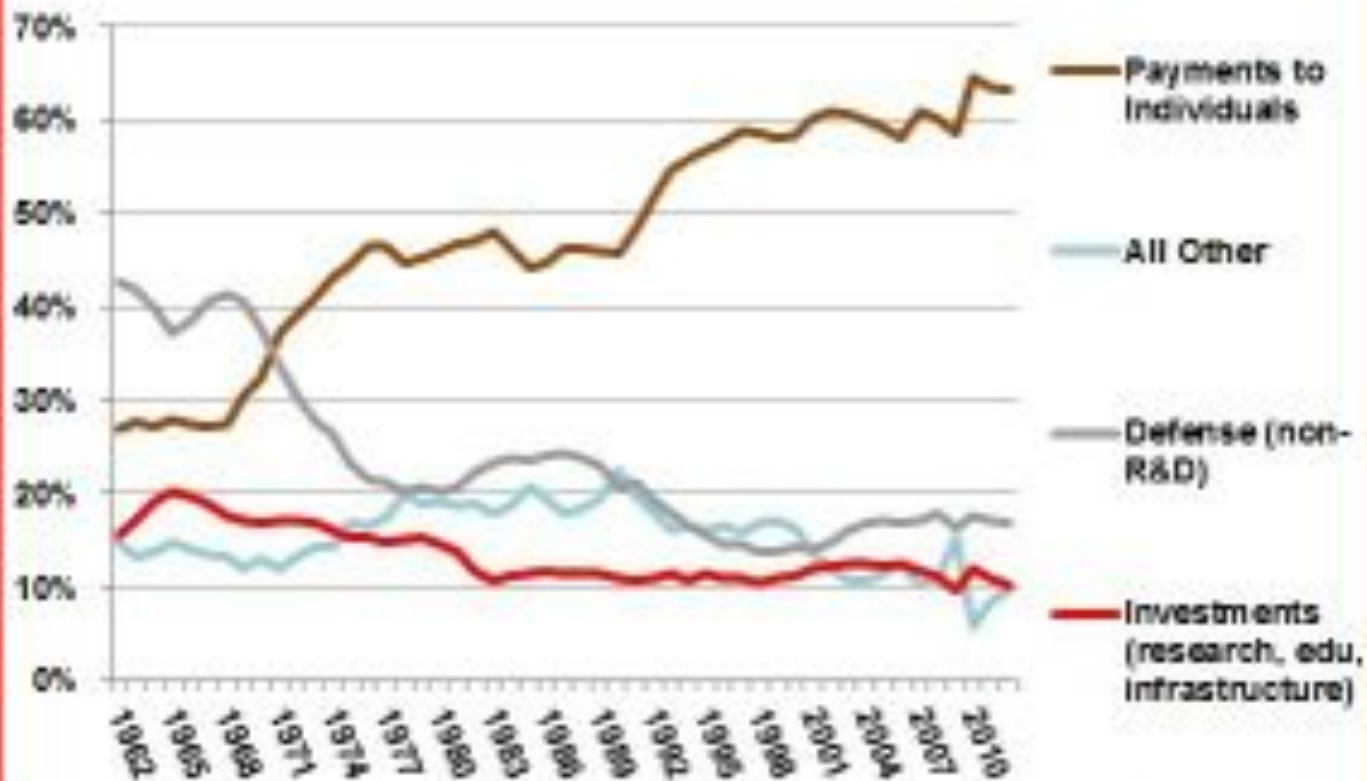
BY 2020, FOUR BIG ITEMS COULD SUCK UP 92% OF TAX DOLLARS



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Computing Research
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Composition of the Federal Budget

Outlays as share of total budget, 1962-2012



Source: Budget of the United States Government, FY 2014. "Investments" include outlays for R&D, education and training, direct nondefense infrastructure, and grants for transportation and other physical capital. "Payments to Individuals" are primarily entitlement programs like Medicare, Medicaid, and Social Security, but also include many other public assistance programs. See OMB Historical Table 11.3 for details. © 2014 AAAS



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Computing Research
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ATTITUDES HAVE CHANGED

THIS MAY SEEM LIKE A DIGRESSION...BUT I HAVE A POINT



NON TANGUNT ME TUTUM, TAC ME INFERA
LUXU TANGIT, TAC
SIC ME TANGIT DE TOTO MUNDO, TAC ME
TANGIT, TAC ME TANGIT DE

NON TANGIT ME TUTUM, TAC ME INFERA
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- Managed the IT R&D Portfolio
- Also, the National Earthquake Hazards Reduction Program and the U.S. Fire Administration



SHAKE'N BAKE

Original **Chicken**



Easy
10 min.
prep!

COOK
THOROUGHLY

SERVING SUGGESTION

NET WT 11 OZ (311g) SEASONED COATING MIX for CHICKEN

4 PACKETS &
SHAKER BAGS



OK, THAT WAS A DIGRESSION



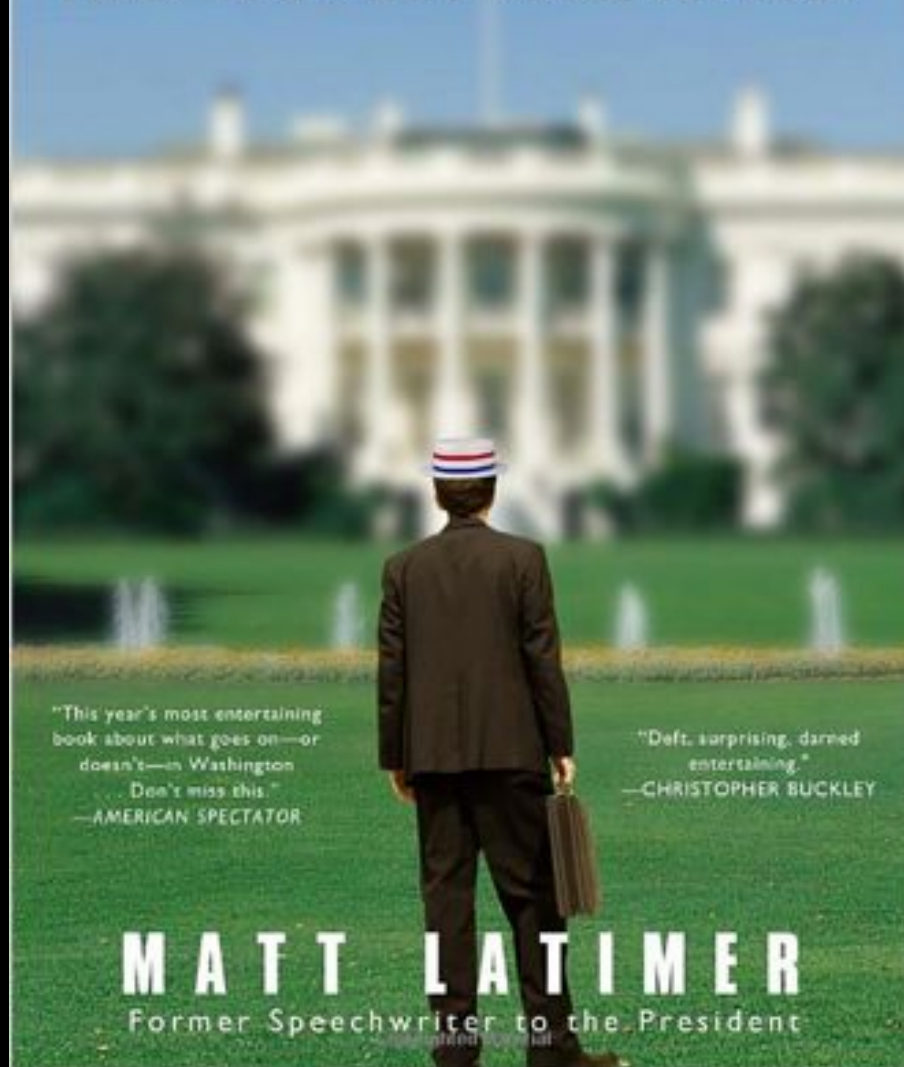


Rep. Nick Smith (R-MI)
served 1993 - 2005

THE NEW YORK TIMES BESTSELLER

SPEECH★LESS

TALES OF A WHITE HOUSE SURVIVOR



"This year's most entertaining
book about what goes on—or
doesn't—in Washington.
Don't miss this."
—AMERICAN SPECTATOR

"Deft, surprising, darned
entertaining."
—CHRISTOPHER BUCKLEY

MATT LATIMER

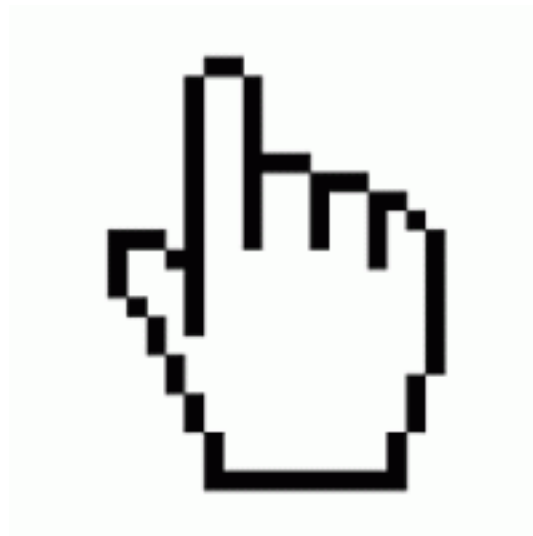
Former Speechwriter to the President

- Smith was somewhat atypical for a Science subcommittee Chair
- Self-styled “Budget Hawk”
- Bit of a maverick – not afraid to buck party leaders, but didn’t do it much

- Trepidation in the Science Advocacy Community over his chairmanship
- Rightfully so – he wasn't well-versed in science and a staunch advocate for cutting Federal spending
- He started his term, at best, agnostic
- He ended his tenure as a champion of science

“Sum of All Knowledge”







- Smith and Sensenbrenner, despite disagreements with the Administration and NSF, didn't use the committee to score political points
- Long-standing tradition on the committee to not advance bills that couldn't be passed unanimously
- Staff of committee had subject-matter expertise

SCIENCE COMMITTEE PAST

- Comity and bipartisanship on the committee probably peaked in about 2007-8 with *Gathering Storm* and the America COMPETES Act
- Breakdown started in earnest in 2010, during reauthorization of COMPETES
- GOP tried to kill bill to deny Dems a win in an election year

- In 2012, Sen. Tom Coburn attacked NSF as wasteful for “silly-sounding” research
- In 2013, Coburn/McCain and Cantor/L. Smith attacked NSF over political science and social science funding
- L. Smith attacks Dept. of Energy over Climate Change and Sustainability research
- L. Smith amends CJS to target SBE

FIRST ACT DEBACLE

- Reauthorization of COMPETES Act
- NSF “Accountability”
- Reduced funding overall
- Specific cuts to SBE
- Energy R&D Act similarly partisan

- Committee essentially at a standstill
- Exodus of experienced GOP staffers
- Things could get worse
 - Cantor, who was a big proponent of the FIRST Act, lost his primary to another Tea Party candidate who claimed he wasn't conservative enough....

CONGRESS IS MORE POLARIZED THAN EVER

- **Not a single** Democratic Senator was more conservative than any GOPer. Not a single GOP Senator is more liberal than any Dem.
- The House is equally polarized, with **only five GOPers** ranking more liberal than the most conservative Dem, and only four Dems more conservative than the most liberal Republican.

From a 2011 National Journal Study of the 2010 election cycle.

CONGRESS IS MORE POLARIZED THAN EVER

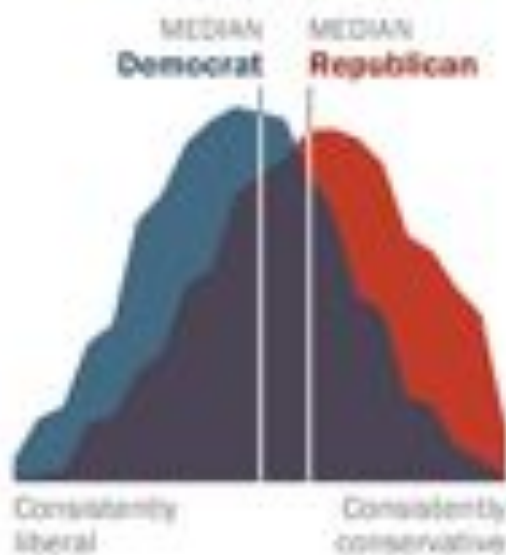
- Of the 98 Democrats who had the most middle-of-the-road voting records in the last Congress, **55** of their seats are now in GOP hands.

From a 2011 National Journal Study of the 2010 election cycle.

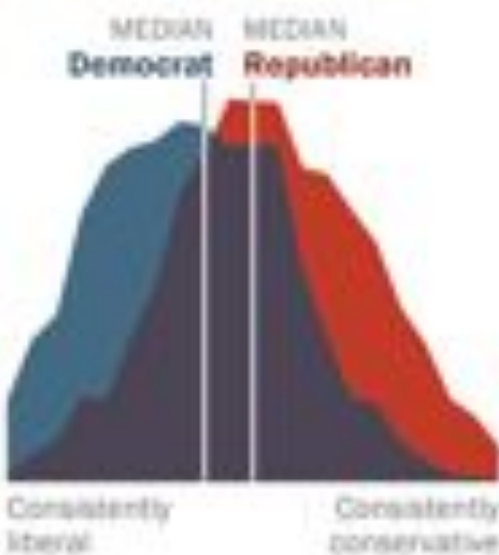
Democrats and Republicans More Ideologically Divided than in the Past

Distribution of Democrats and Republicans on a 10-item scale of political values

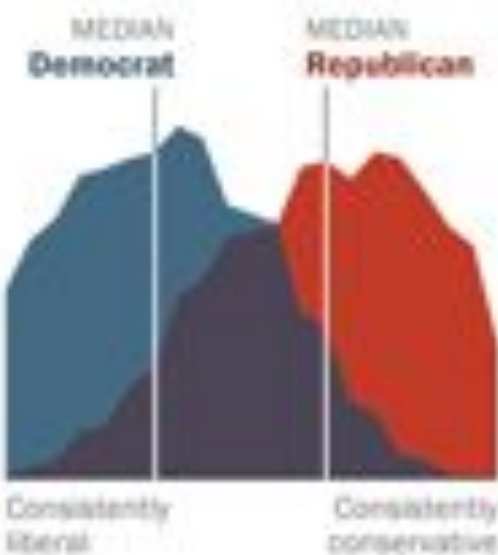
1994



2004



2014



Source: 2014 Political Polarization in the American Public

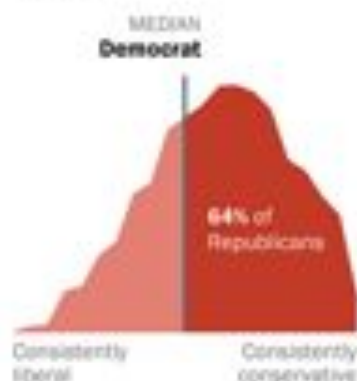
Notes: Ideological consistency based on a scale of 10 political values questions (see Appendix A). The blue area in this chart represents the ideological distribution of Democrats; the red area of Republicans. The overlap of these two distributions is shaded purple. Republicans include Republican-leaning independents; Democrats include Democratic-leaning independents (see Appendix B).

PEW RESEARCH CENTER

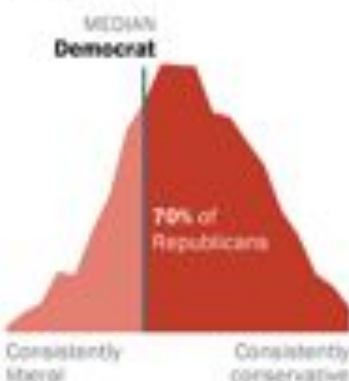
Republicans Shift to the Right, Democrats to the Left

Distribution of Republicans and Democrats on a 10-item scale of political values

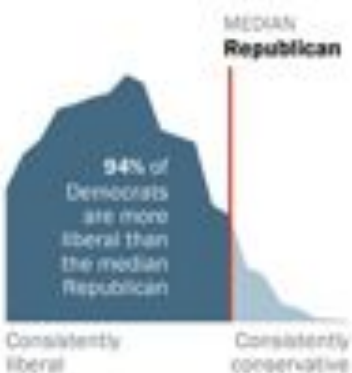
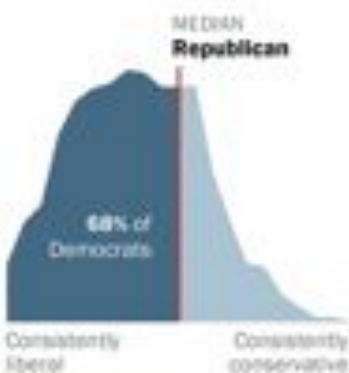
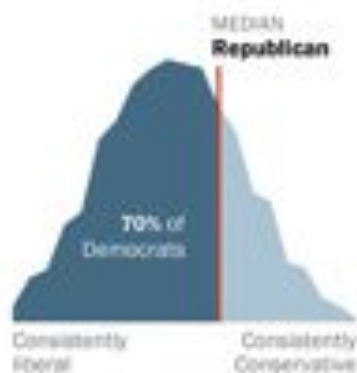
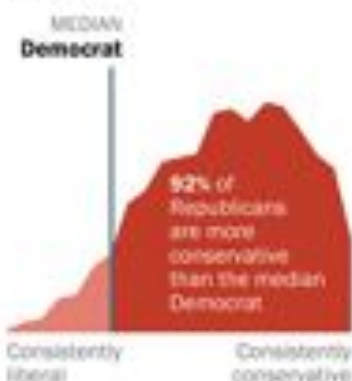
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Notes: Ideological consistency based on a scale of 10 political values questions (see Appendix A). Republicans include Republican-leaning independents; Democrats include Democratic-leaning independents (see Appendix B).

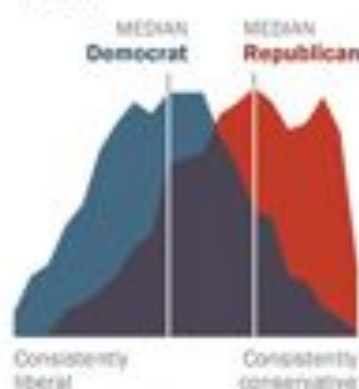
PEW RESEARCH CENTER

Polarization Surges Among the Politically Engaged

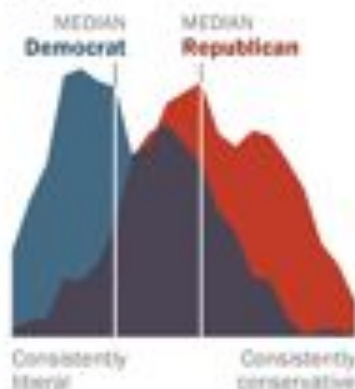
Distribution of Democrats and Republicans on a 10-item scale of political values, by level of political engagement

Among the politically engaged

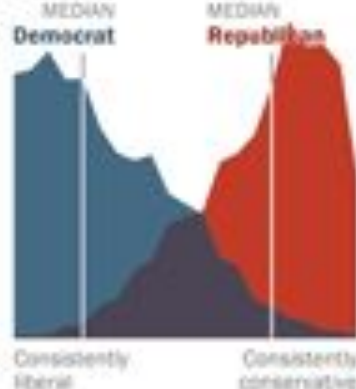
1994



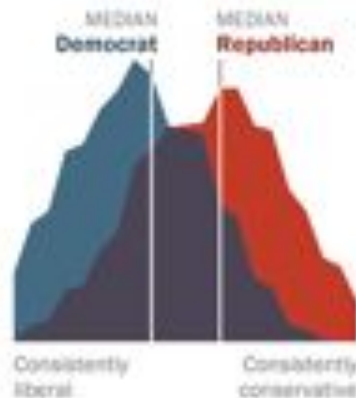
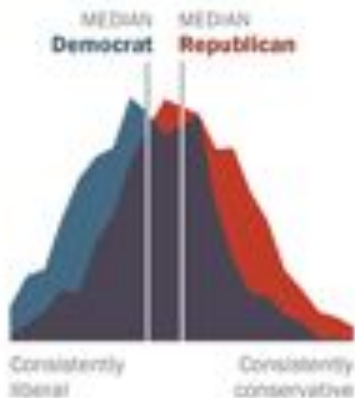
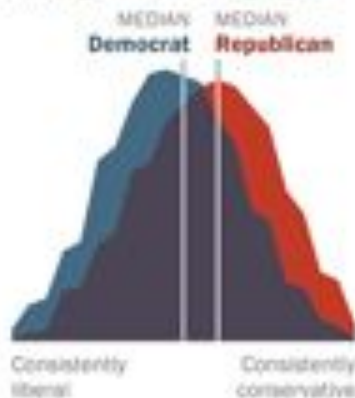
2004



2014



Among the less engaged



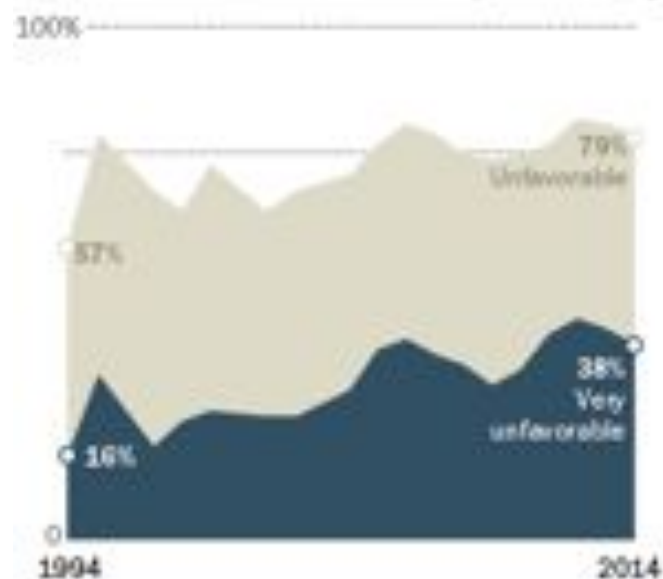
Source: 2014 Political Polarization in the American Public

Notes: Ideological consistency based on a scale of 10 political values questions (see Appendix A). Republicans include Republican-leaning independents. Democrats include Democratic-leaning independents (see Appendix B). Politically engaged are defined as those who are registered to vote, follow government and public affairs most of the time and say they vote always or nearly always.

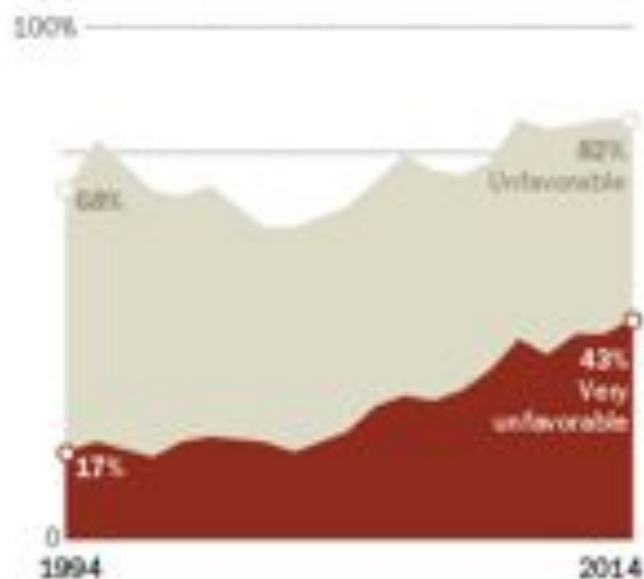
PEW RESEARCH CENTER

A Rising Tide of Mutual Antipathy

Democratic attitudes about the Republican Party



Republican attitudes about the Democratic Party



Source: 2014 Political Polarization in the American Public

Notes: Republicans include Republican-leaning independents; Democrats include Democratic-leaning independents.

PEW RESEARCH CENTER

SO THE CHALLENGES ARE DAUNTING

AND WE HAVE A MUCH MORE LIMITED TOOL BOX...

FORTUNATELY, WE'VE GOT A PRETTY GOOD STORY

TALKING POINTS



CRA
Computing Research
Association

INFORMATION TECHNOLOGY R&D AND U.S. INNOVATION

- **Advances in information technology are transforming all aspects of our lives:** commerce, education, employment, health care, manufacturing, government, national security, communications, entertainment, science, and engineering.
- **Advances in information technology also drive our economy** – both directly (the growth of the IT sector itself) and in productivity gains across the economy. Advances in computing are enabling innovation in all fields.
- **The history of innovation in computing is impressive, but the future opportunities are even more compelling:** the future of networking, revolutionizing transportation, personalized education, powering the smart grid, empowering the developing world, improving health care, enabling advanced manufacturing, driving advances in *all* fields of science and engineering.

It's impossible to imagine a field with greater opportunity to change the world.

- **The IT R&D ecosystem is crucial to continued innovation in IT, and federal support is at the heart of that ecosystem.** Essentially every aspect of IT upon which we rely today bears the stamp of federal support.

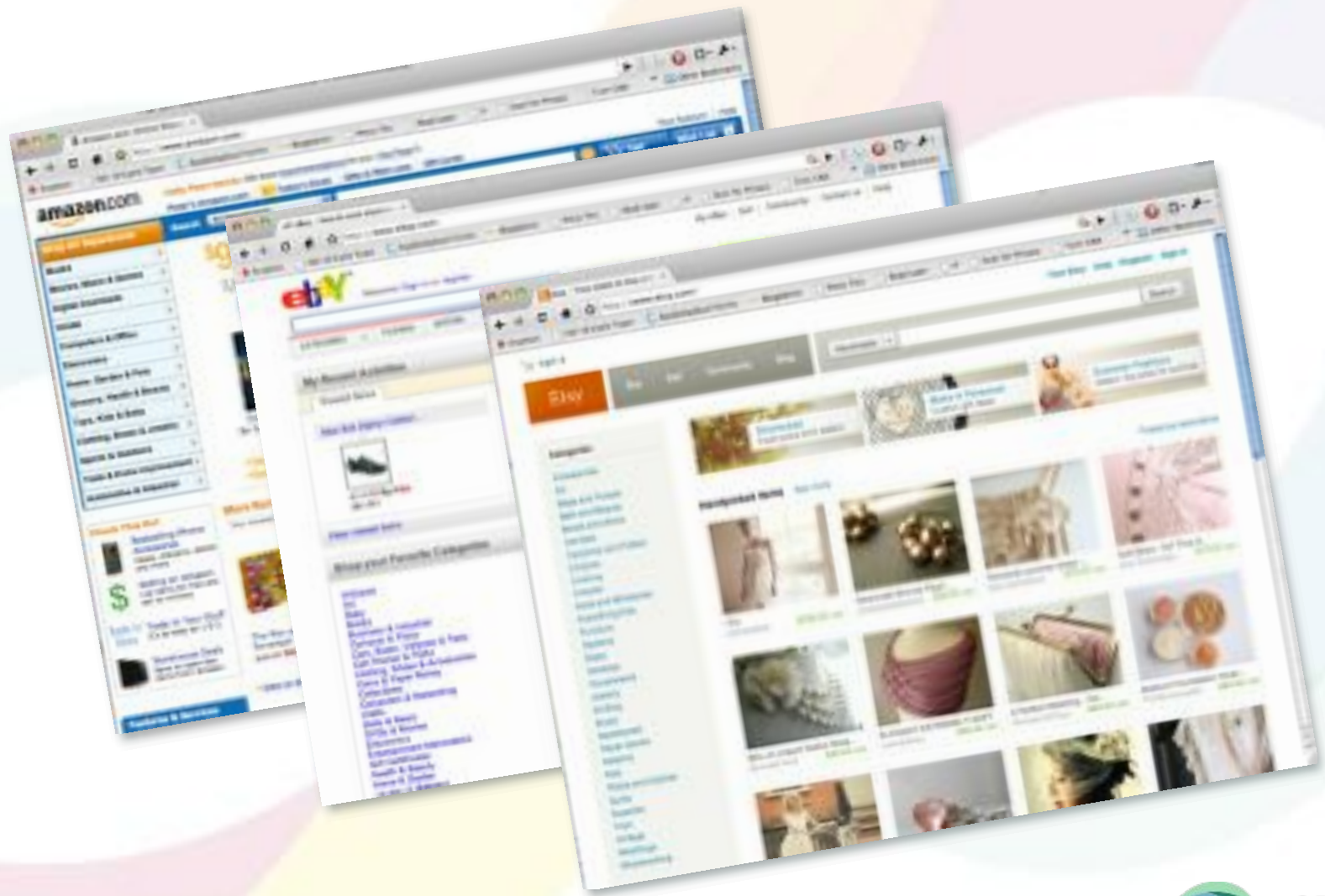
"In order to sustain and improve our quality of life, it is crucial that the United States continue to innovate more rapidly and more creatively than other countries in important areas of IT. Only by continuing to invest in core IT science and technology will we continue to reap such enormous societal benefits in the decades to come."

– President's Council of Advisors for Science and Technology
(in *Designing a Digital Future*, December 2010)



CRA
Computing Research
Association

**Advances in IT are transforming
all aspects of our lives**

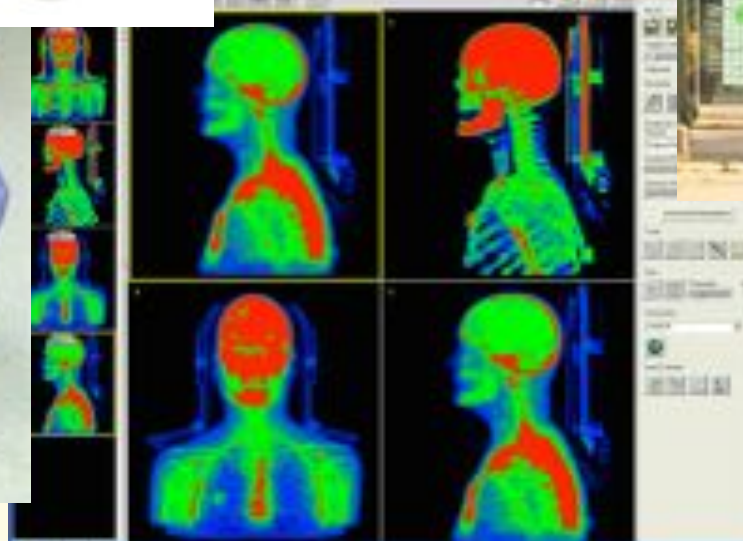


Conduct commerce...

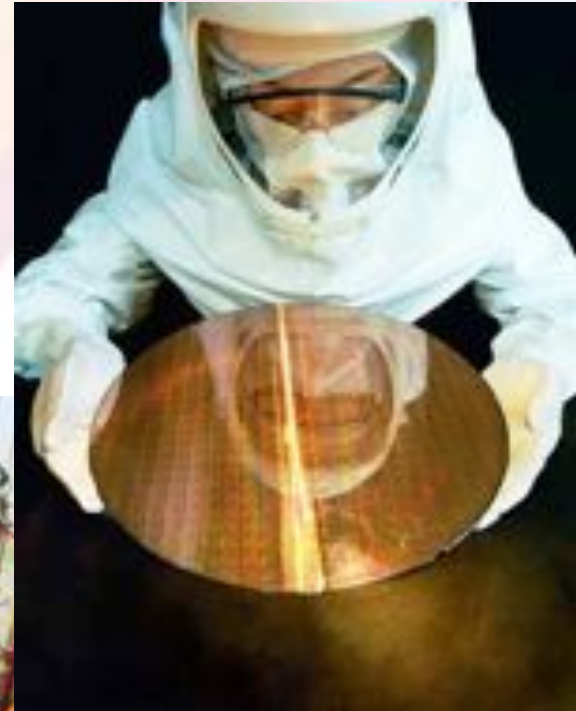
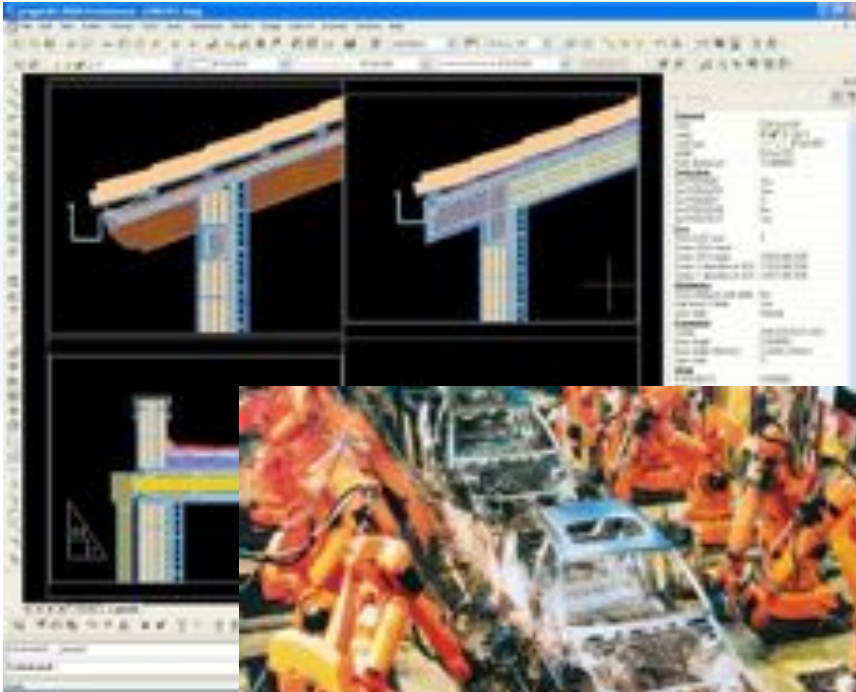


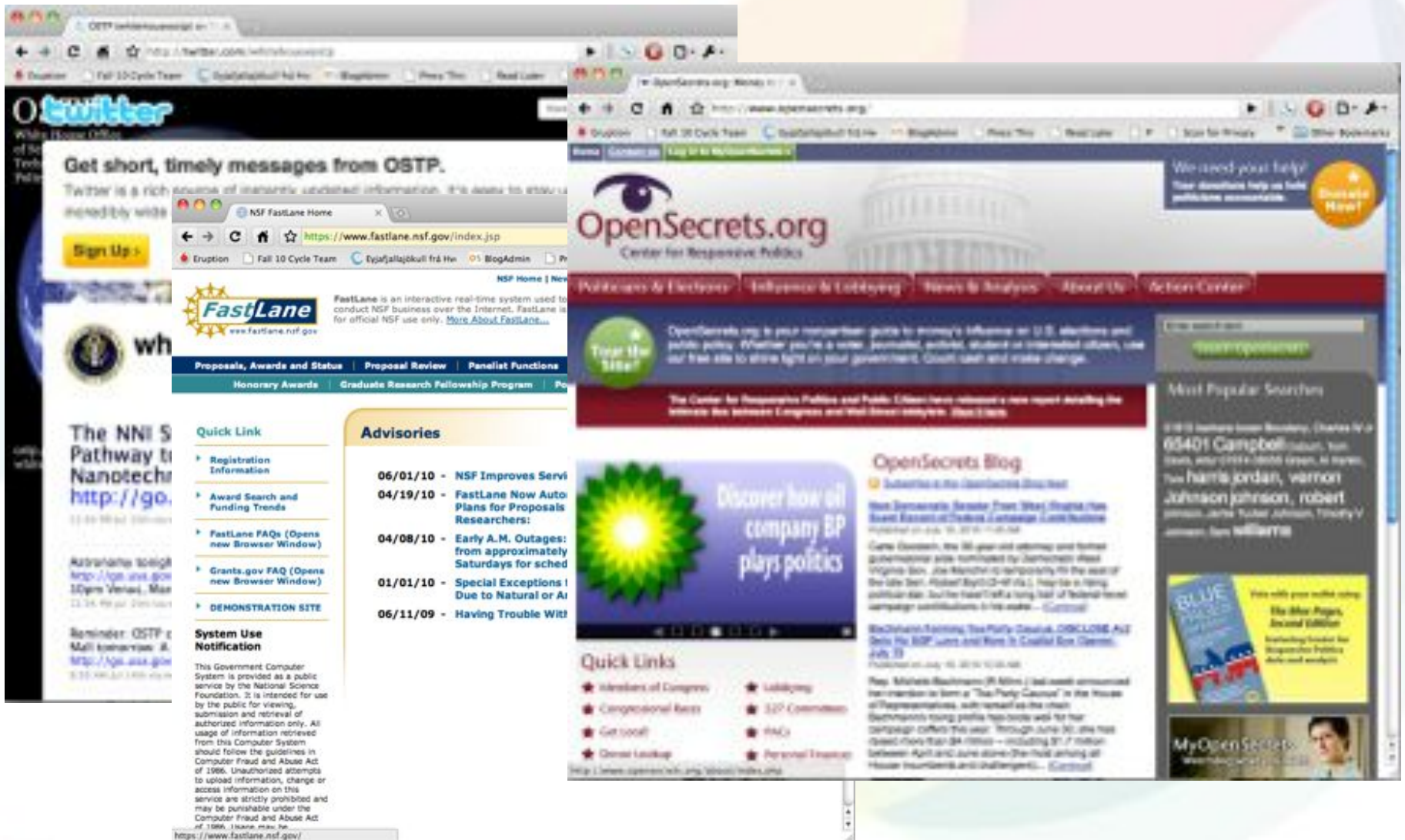
...our employment...

...our health care...



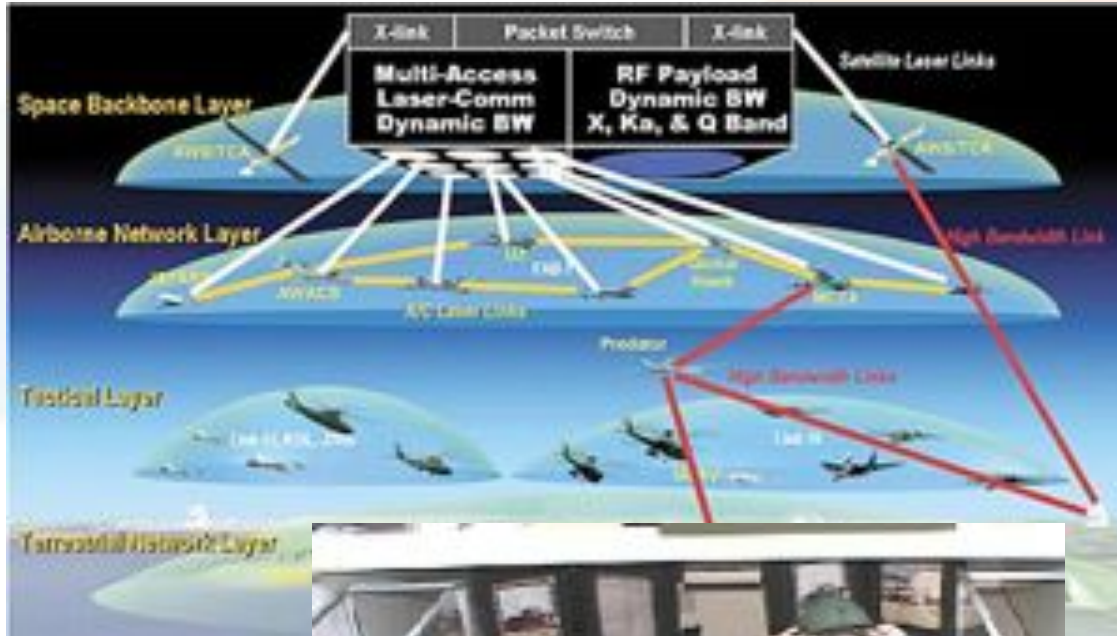
...how we manufacture...





...how government functions...

...how we preserve our national security...





...how we communicate...

...and how we're entertained.



Advances in IT also drive our economy

- Computing drives our economy, not just through the growth of the IT industry, but also through productivity gains across the entire economy
- Remarkable economic growth between '95 and '02 was spurred by productivity growth enabled almost completely by factors related to IT¹
- IT enables productivity growth, enables the economy to run at full capacity, enables goods to be allocated more efficiently and the production of higher quality goods and services²

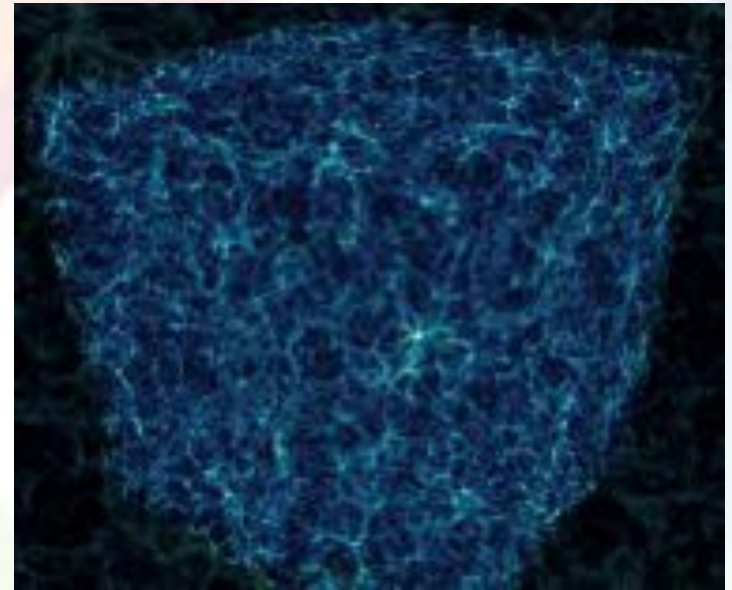
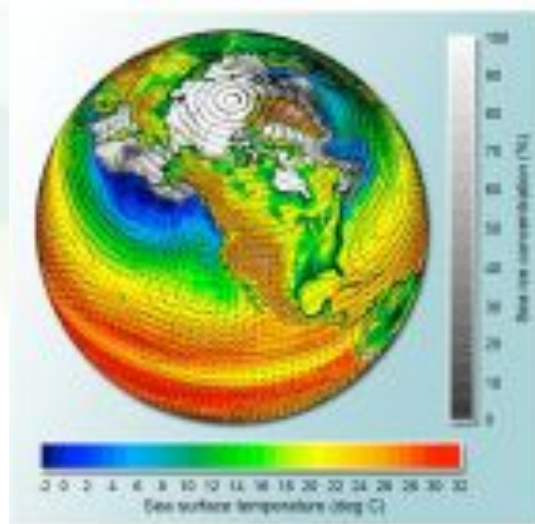
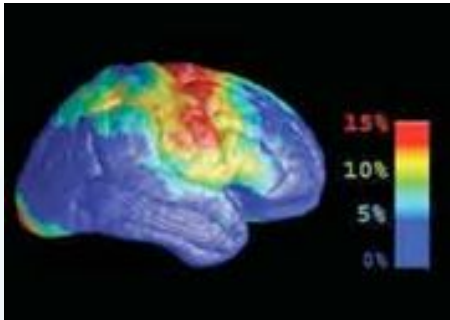
1. Jorgenson, Dale W., Mus S. Ho, and Kevin J. Stiroh. Productivity, Volume 3: Information Technology and the American Growth Resurgence. MIT Press. 2005.

2. Atkinson, Robert D., Andrew S. McKay. Digital Prosperity: Understanding the Economic Benefits of the Information Technology Revolution. Information Technology and Innovation Foundation. 2007.



Advances in computing are enabling
innovation in all other fields...

In Science and Engineering...



Created by Matthew Hall of NCSA's Advanced Visualization Laboratory

Computer modeling, visualization and data analysis have joined observation, theory, and experiment as the drivers of scientific discovery.

**The history is impressive, but the future
is even more compelling**

- The future of networking
- Revolutionizing transportation
- Delivering personalized education
- Enabling the smart grid
- Empowering the developing world
- Improving health care
- Driving advances in **all** fields of S&E

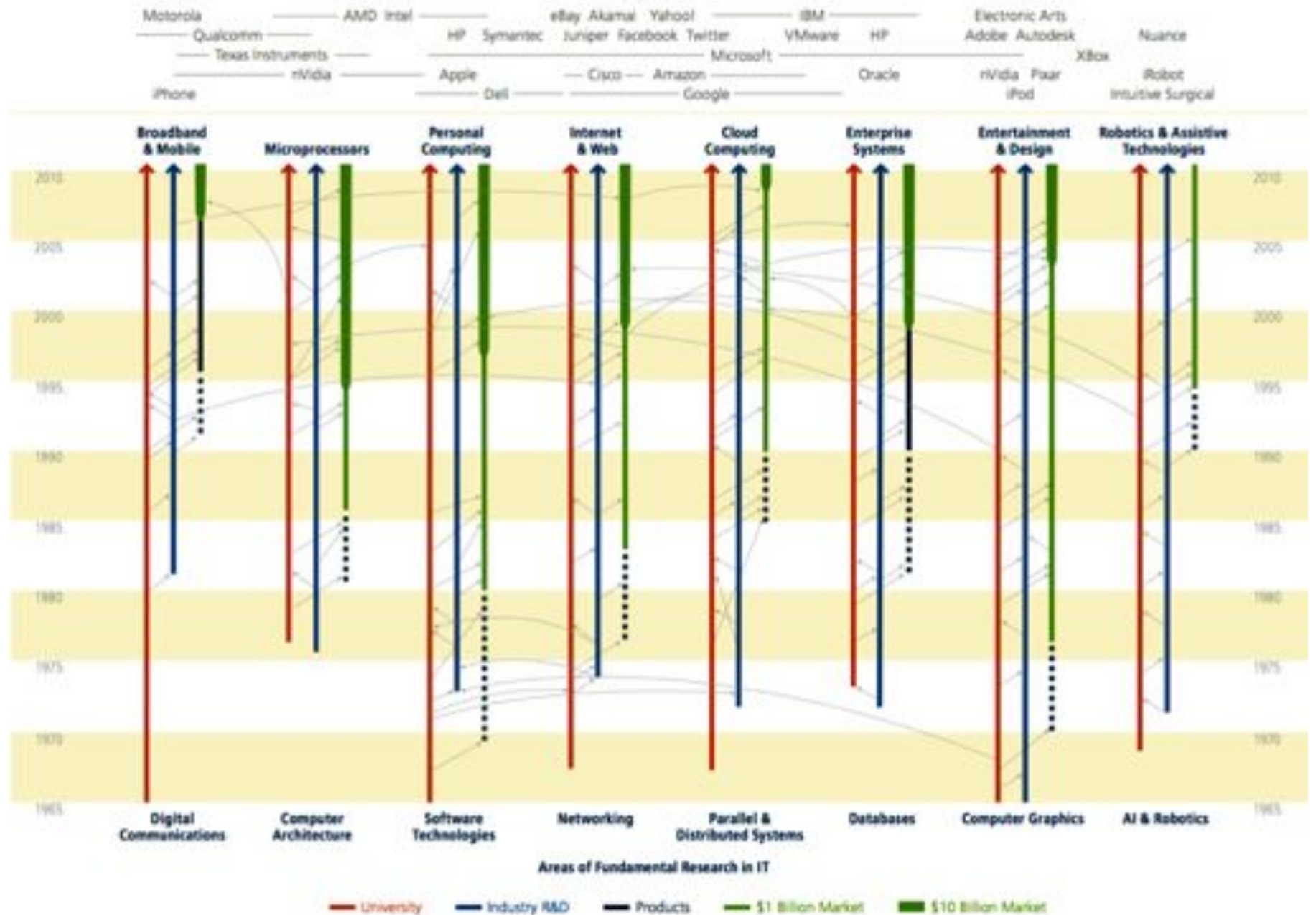
**It's impossible to imagine a field with greater
opportunity to change the world**

The IT R&D ecosystem is **crucial** to innovation in IT, and federal support is **at the heart** of that ecosystem

“ [An] extraordinarily productive interplay of federally funded university research, federally and privately funded industrial research, and entrepreneurial companies founded and staffed by people who moved back and forth between universities and industry.”

-NRC on the federal IT R&D Program

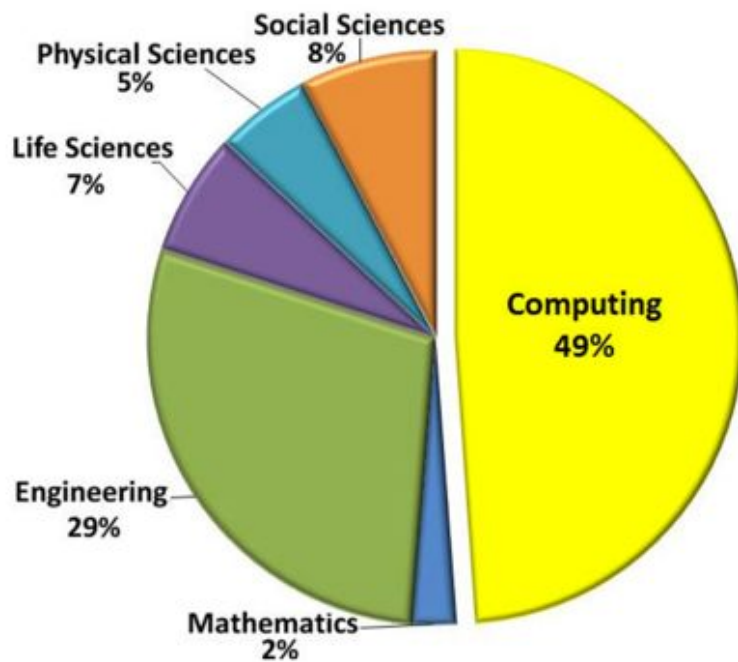
IT Sectors With Large Economic Impact



**ESSENTIALLY EVERY ASPECT OF INFORMATION TECHNOLOGY ON WHICH
WE RELY TODAY BEARS THE STAMP OF FEDERAL SUPPORT.**

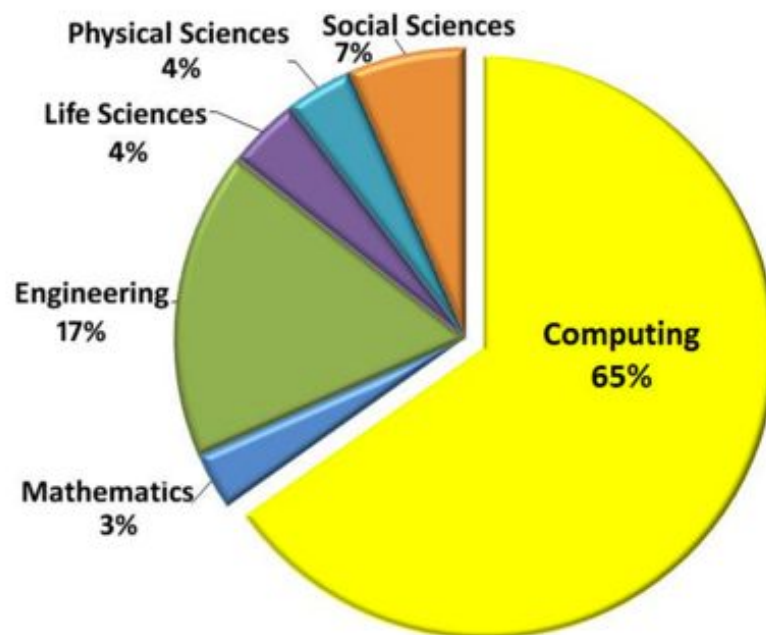
Where the STEM Jobs Will Be

Projected Annual Growth of Total STEM Job Openings 2012-2022



Where the STEM Jobs Will Be

Projected Annual Growth of **NEWLY CREATED** STEM Job Openings 2012-2022



Source: Jobs data are calculated from the Bureau of Labor Statistics (BLS), Employment Projections 2012-2022, available at <http://www.bls.gov/emp/>.
Courtesy of Association for Computing Machinery (acm.org).

WE'RE OPPORTUNISTIC...

- Congressional testimony

House Committee on Science, Space and Technology

Subcommittee on Research and Science Education

Hearing on the NITRD Program

February 14, 2013



WE'RE OPPORTUNISTIC...

- Congressional testimony
- We host our own events and partner with others



CRA's Congressional Fall Fly-In

September 2013



Task Force
on American
Innovation

Deconstructing The iPad

How Federally Supported Research Leads to
Game-Changing Innovation



ACM US Public
Policy Council





DECONSTRUCTING...

amazon

The Amazon logo, featuring the word "amazon" in a bold, black, sans-serif font. Below the text is a thick, orange curved arrow that starts under the 'a' and points towards the 'n', resembling a smile.

Fall 2014?

WE'RE OPPORTUNISTIC...

- Congressional testimony
- We host our own events and partner with others
- We've developed a good “brand”
- We strive to engage the community in policymaking – LiSPI

WE'RE OPPORTUNISTIC...

- Part of a broader science advocacy community that's looking for good stories to tell
- Join coalitions around our interests
 - CNSF, CNSR, TFAI, ESC, CinC
- We leverage our interactions with the press

We leverage social media (or try to...)



<http://cra.org/blog>

On Facebook

@CRATweets

AND WE'VE HAD SOME SUCCESS...

“This is our generation’s Sputnik moment. Two years ago, I said that we needed to reach a level of research and development we haven’t seen since the height of the Space Race. In a few weeks, I will be sending a budget to Congress that helps us meet that goal. We’ll invest in biomedical research, information technology, and especially clean energy technology – an investment that will strengthen our security, protect our planet, and create countless new jobs for our people.”



If we want America to stay on the cutting edge, we need young Americans to master the tools and technology that will change the way we do just about everything.

- President Obama in a video on behalf of the Hour of Code

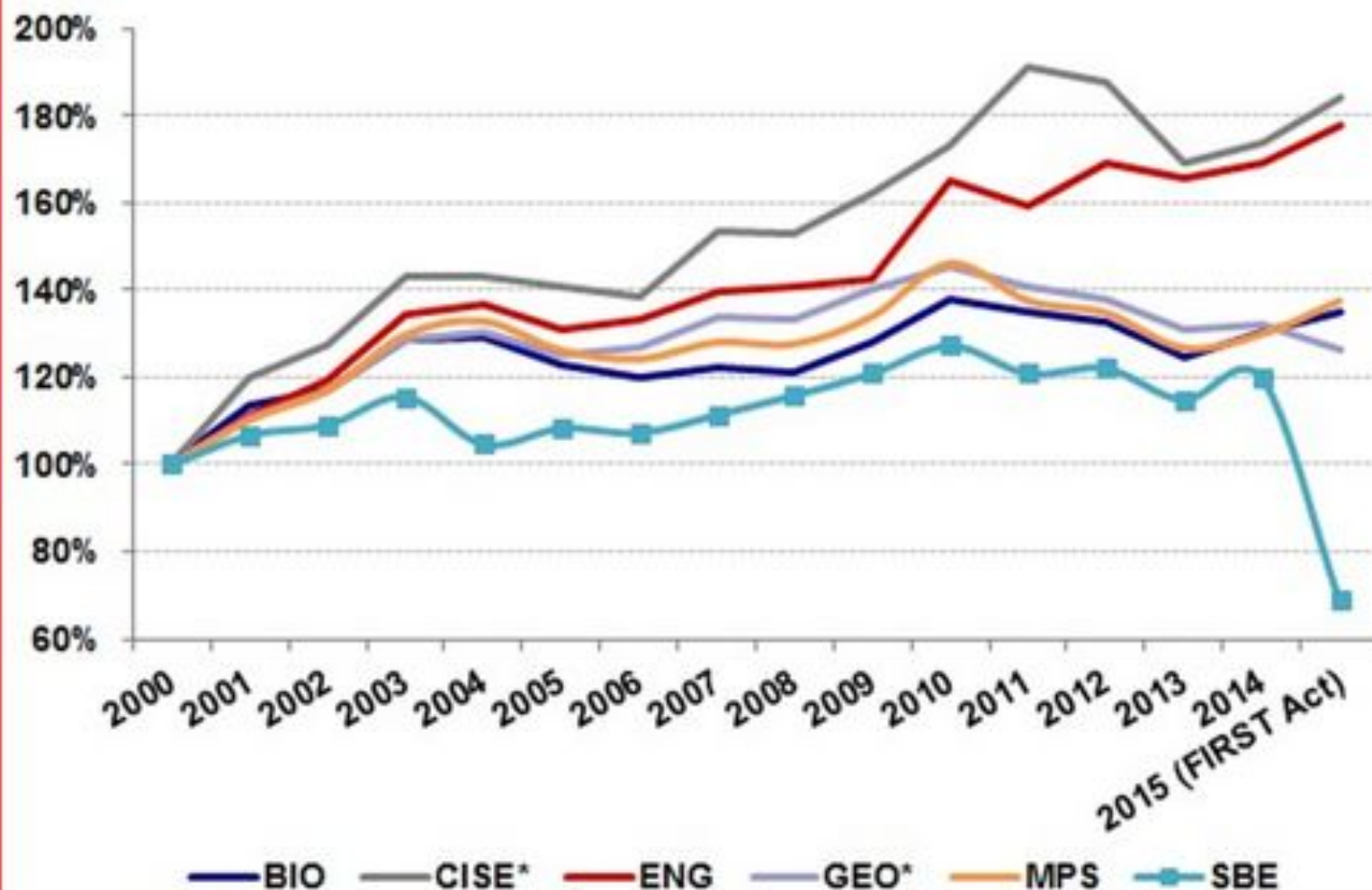


NSF's entire increase is provided to core research and education activities, which are critical to innovation and U.S. economic competitiveness, including funding for an advanced manufacturing science initiative and for research in **cyber-security and cyber-infrastructure.**



NSF Directorate Budgets and the FIRST Act

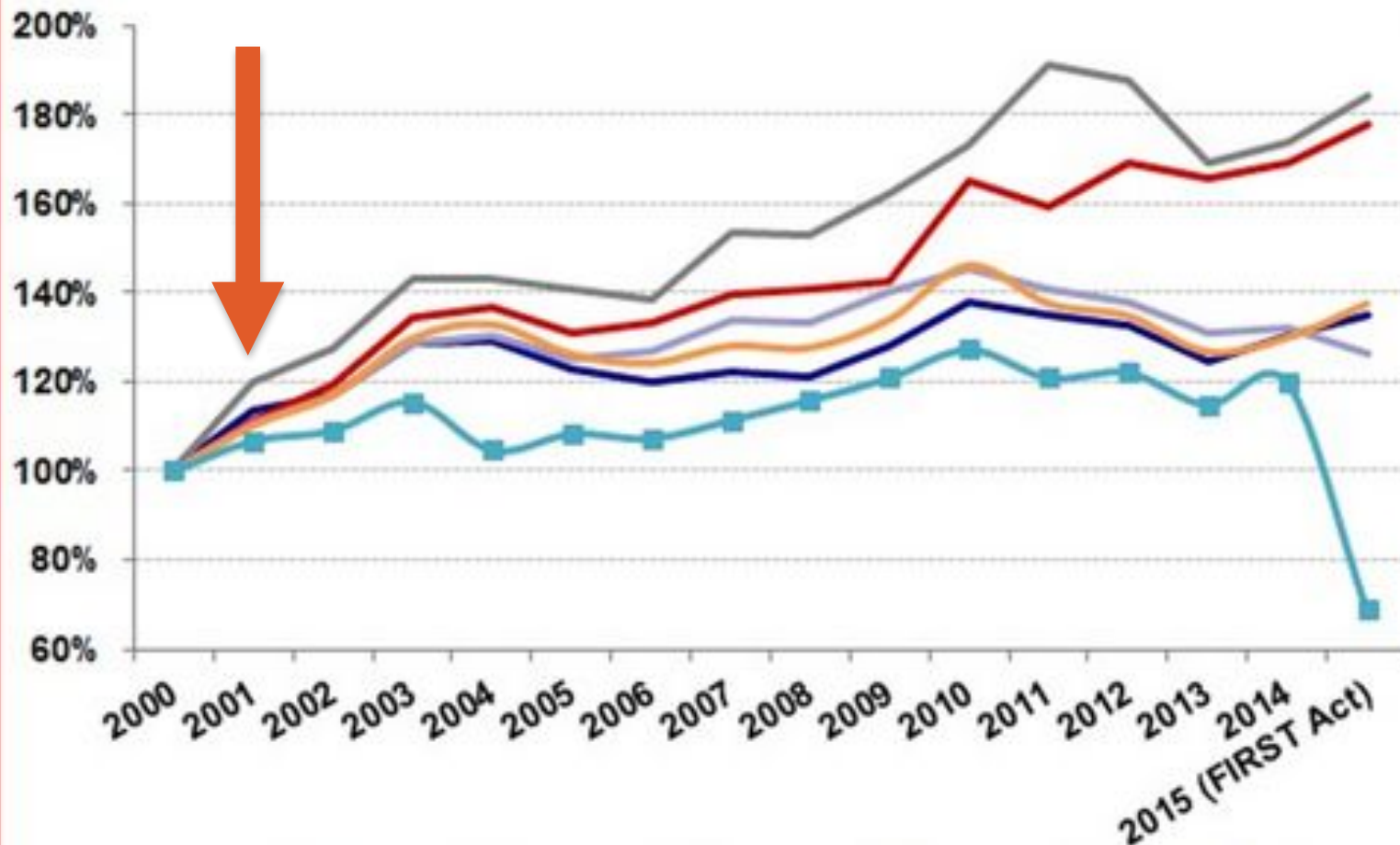
Percent change from FY 2000 funding levels, constant dollars



*Adjusted for comparability. Based on historical agency data and proposed authorizations in the FIRST Act. © 2014 AAAS

NSF Directorate Budgets and the FIRST Act

Percent change from FY 2000 funding levels, constant dollars



*Adjusted for comparability. Based on historical agency data and proposed authorizations in the FIRST Act. © 2014 AAAS

MORE RECENT “SUCCESSES”

- FY15 House CJS bill includes 3.3 percent bump for NSF in a bill that’s otherwise flat
- FY15 Energy and Water approps includes a 13 percent bump for ASCR, despite holding Office of Science flat
- FIRST Act chicanery
- STEM Ed Act, Senate COMPETES

“TARGET” STATUS?

OTHER “STUFF”

HOW CAN WE DO MORE?

- We want to do a better job of making the case to other agencies
 - CCC is incredibly useful here
- We want to get the community more engaged in making policy
 - Congressional dysfunction means agency processes are even more important!

LiSPI 2015

CRA/CCC Leadership in Science Policy Institute

April 27-28, 2015
Washington, DC

Nominations
December 2014!





CRA's Congressional Fall Fly-In

September 16-17, 2014

cra.org/govaffairs/advocacy/cvds



**MAKE THE CASE FOR COMPUTING
IN YOUR OWN SPHERES OF INFLUENCE!**

**WITHOUT A STRONG CASE AND SUPPORT FROM A BROAD
COMMUNITY – INDUSTRY, HIGHER EDUCATION,
SCIENTIFIC SOCIETIES – THE NEED FOR RESEARCH
FUNDING WILL FACE A CHILLY RECEPTION AMONG
POLICYMAKERS**

Thanks!

Peter Harsha
Director of Government Affairs

harsha@cra.org

@peterharsha and
@CRATweets

p: 202.556.4335