Twitter
#PeterHarsha’sGiving
HisPlenaryTalkAtCRA’s
SnowbirdConference
AndItDoesn’tSeemTo
BeAsBadAsIThoughtIt
MightBe,ButThere’s
StillAWaysToGo
#PeterHarsha’s Giving His Plenary Talk At CRA’s Snowbird Conference And It Doesn’t Seem To Be As Bad As I Thought It Might Be, But There’s Still A Ways To Go
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Structure of Talk
Structure of Talk

+ Challenges We Face
Structure of Talk

+ Challenges We Face
+ How We’re Doing
Structure of Talk

+ Challenges We Face
+ How We’re Doing
+ What the Future Looks Like
Challenges
# of Lobbyists (FY11): 12,645

Lobbying Expenditures (FY11): $3.3 billion

Working "S&T": 327
FY13 Budget:

$3.8 trillion
FY13 Budget:

- Mandatory: $2.2 trillion
- Discretionary: $1.27 trillion
- Interest: $250 billion
FY13 Budget:

Discretionary
$1.27 trillion
FY13 Budget: 

Discretionary 

$1.27 trillion
Commerce, Justice, Science
Commerce, Justice, Science

+ National Science Foundation
Commerce, Justice, Science

+ National Science Foundation
+ NIST
Commerce, Justice, Science

+ National Science Foundation
+ NIST
+ NOAA
Commerce, Justice, Science

+ National Science Foundation
+ NIST
+ NOAA
+ NASA
Commerce, Justice, Science

+ National Science Foundation
+ NIST
+ NOAA
+ NASA
+ FBI/Justice
Commerce, Justice, Science

+ National Science Foundation
+ NIST
+ NOAA
+ NASA
+ FBI/Justice
+ Census
NSF, Cops or Spaceships
Other challenges
Two years ago: Porn
Two years ago: Porn
Two years ago: Porn
Last year...
This year: Political Scientists

Rep. Jeff Flake (R-AZ)
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.

• 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.
So, we have to make a case compelling enough to compete...
So, we have to make a case compelling enough to compete...

...but with a much more limited tool box.
Fortunately, we’ve got a pretty good story.
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)
Advances in IT are transforming all aspects of our lives.
Advances in IT also drive our economy
The history is impressive, but the future is even more compelling
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.
And we’ve had successes...
“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.”
“[H]ealthy levels of investment in scientific research are the key to long-term economic growth that exceeds population growth. These investments lead to innovation and improve the competitiveness of American businesses, leading, in turn, to positive impacts on the quality of life for all Americans.”

-House FY 12 CJS Subcommittee Report
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.

-House FY 13 CJS Subcommittee Report
The long-term federal investment in basic research within institutions of higher learning has been a crucial engine for innovation in our economy, and one that could not be replicated through other sources of funding. A Romney Administration will maintain a strong commitment to research in the physical, biological, and social sciences and to ensure that the priorities for research funding are not hijacked by short-term political imperatives.

-Romney Presidential Platform
How we’re doing
FY 13 Budget Request
+ FY 13 Budget Request
+ FY 13 Appropriations
FY13 President's Request
## R&D Spending Levels in President’s Request
*(in millions)*

<table>
<thead>
<tr>
<th></th>
<th>FY11</th>
<th>FY12 Final</th>
<th>FY13 PBR</th>
<th>$ change vs. FY12</th>
<th>% change vs. FY12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Research</td>
<td>$29,697</td>
<td>$30,178</td>
<td>$30,627</td>
<td>$449</td>
<td>1%</td>
</tr>
<tr>
<td>Applied</td>
<td>$30,833</td>
<td>$31,783</td>
<td>$33,369</td>
<td>$1,586</td>
<td>5%</td>
</tr>
<tr>
<td>Develop.</td>
<td>$80,246</td>
<td>$74,483</td>
<td>$74,138</td>
<td>-$345</td>
<td>0%</td>
</tr>
<tr>
<td>Facilities</td>
<td>$1,938</td>
<td>$2,425</td>
<td>$2,690</td>
<td>$265</td>
<td>11%</td>
</tr>
<tr>
<td></td>
<td>FY11</td>
<td>FY12 Final</td>
<td>FY13 PBR</td>
<td>$ change v. FY12</td>
<td>% change v. FY12</td>
</tr>
<tr>
<td>----------</td>
<td>-------</td>
<td>------------</td>
<td>----------</td>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>R&amp;RA</td>
<td>$5,608</td>
<td>$5,689</td>
<td>$5,983</td>
<td>$294</td>
<td>5.2%</td>
</tr>
<tr>
<td>MREFC</td>
<td>$125</td>
<td>$197</td>
<td>$196</td>
<td>-$1</td>
<td>-0.5%</td>
</tr>
<tr>
<td>EHR</td>
<td>$861</td>
<td>$829</td>
<td>$875</td>
<td>$46</td>
<td>5.5%</td>
</tr>
<tr>
<td>Total</td>
<td>$6,913</td>
<td>$7,033</td>
<td>$7,373</td>
<td>$340</td>
<td>4.8%</td>
</tr>
</tbody>
</table>
# FY13 Request
(in millions)

<table>
<thead>
<tr>
<th>Division</th>
<th>FY11</th>
<th>FY12 Final</th>
<th>FY13 PBR</th>
<th>$ change</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>R&amp;RA</td>
<td>$5,564</td>
<td>$5,719</td>
<td>$5,983</td>
<td>$264</td>
<td>4.6%</td>
</tr>
<tr>
<td>BIO</td>
<td>$712</td>
<td>$712</td>
<td>$734</td>
<td>$22</td>
<td>3.1%</td>
</tr>
<tr>
<td>CISE</td>
<td>$636</td>
<td>$654</td>
<td>$710</td>
<td>$56</td>
<td>8.6%</td>
</tr>
<tr>
<td>ENG</td>
<td>$763</td>
<td>$826</td>
<td>$876</td>
<td>$50</td>
<td>6.1%</td>
</tr>
<tr>
<td>GEO</td>
<td>$885</td>
<td>$885</td>
<td>$906</td>
<td>$21</td>
<td>2.4%</td>
</tr>
<tr>
<td>MPS</td>
<td>$1,312</td>
<td>$1,308</td>
<td>$1,345</td>
<td>$37</td>
<td>2.8%</td>
</tr>
<tr>
<td>OCI*</td>
<td>$301</td>
<td>$212</td>
<td>$218</td>
<td>$6</td>
<td>2.8%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$6,860</td>
<td>$7,033</td>
<td>$7,373</td>
<td>$340</td>
<td>4.8%</td>
</tr>
</tbody>
</table>

*OCI FY11 funds includes $90 million that was de-obligated in FY10.*
Cyber-enabled Materials, Manufacturing, and Smart Systems (CEMMS)

$247 million program; $91 million in CISE

Accelerate advances in 21st century smart engineered systems — systems that sense, respond, and adapt to the environment
Cyberinfrastructure Framework for 21st Century Science and Engineering (CIF21)
$106 million; $16 million in CISE

“Accelerate the progress of scientific discovery and innovation”
Advanced Computational Infrastructure and Big Data
Expeditions in Education (E2)
$49 million; $4 million in CISE

“Integrate, leverage and expand STEM ED” using Cyberlearning
OneNSF Initiatives

NSF Innovation Corps (I-Corps)
$19 million; $6 million in CISE

Accelerate innovations from the lab to the market
Integrated NSF Support Promoting Interdisciplinary Research and Education (INSPIRE)

$63 million; $4 million in CISE

Aims to catalyze interdisciplinary research
Secure and Trustworthy Cyberspace (SaTC)
$110 million; $69 million in CISE

“build a cybersecure society and provide a strong competitive edge in the Nation’s ability to produce high-quality digital systems and a well-trained cybersecurity workforce”
Science, Engineering, and Education for Sustainability (SEES)
$203$ million; $11.5$ million in CISE

Monitoring, data, scalability, addressing complexity, and behavior modeling and change
Build the core through initiatives...
## FY13 Request
(in millions)

<table>
<thead>
<tr>
<th></th>
<th>FY11</th>
<th>FY12 Final</th>
<th>FY13 PBR</th>
<th>$ change v. FY12</th>
<th>% change v. FY12</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI</td>
<td>$4,897</td>
<td>$4,874</td>
<td>$4,992</td>
<td>$118</td>
<td>2.4%</td>
</tr>
<tr>
<td>ARPA-E*</td>
<td>$180</td>
<td>$275</td>
<td>$325</td>
<td>$50</td>
<td>18.2%</td>
</tr>
</tbody>
</table>

* ARPA-E figure does not include $25 million request for “program direction”
# FY13 Request
*(in millions)*

<table>
<thead>
<tr>
<th>Program</th>
<th>FY11</th>
<th>FY12 Final</th>
<th>FY13 PBR</th>
<th>$ change v. FY13</th>
<th>% change v. FY13</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCI</td>
<td>$4,897</td>
<td>$4,874</td>
<td>$4,992</td>
<td>$118</td>
<td>2.4%</td>
</tr>
<tr>
<td>ASCR</td>
<td>$410</td>
<td>$441</td>
<td>$455</td>
<td>$14</td>
<td>3.2%</td>
</tr>
<tr>
<td>Basic Energy</td>
<td>$1,639</td>
<td>$1,688</td>
<td>$1,800</td>
<td>$112</td>
<td>6.6%</td>
</tr>
<tr>
<td>ARPA-E</td>
<td>$180</td>
<td>$275</td>
<td>$325</td>
<td>$50</td>
<td>18.2%</td>
</tr>
</tbody>
</table>
## FY13 Request
### R&D
#### (in millions)

<table>
<thead>
<tr>
<th></th>
<th>FY11</th>
<th>FY12 Final</th>
<th>FY13 PBR</th>
<th>$ change v. FY12</th>
<th>% change v. FY12</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>$1,877</td>
<td>$2,112</td>
<td>$2,117</td>
<td>$5</td>
<td>0.2%</td>
</tr>
<tr>
<td>6.2</td>
<td>$4,329</td>
<td>$4,739</td>
<td>$4,478</td>
<td>-$261</td>
<td>-5.5%</td>
</tr>
<tr>
<td>6.3</td>
<td>$5,340</td>
<td>$5,411</td>
<td>$5,266</td>
<td>-$145</td>
<td>-2.7%</td>
</tr>
<tr>
<td>Total</td>
<td>$11,546</td>
<td>$12,262</td>
<td>$11,861</td>
<td>-$401</td>
<td>-3.3%</td>
</tr>
</tbody>
</table>
## FY13 Request

*(in millions)*

<table>
<thead>
<tr>
<th></th>
<th>FY11</th>
<th>FY12 Final</th>
<th>FY13 PBR</th>
<th>$ change v. FY12</th>
<th>% change v. FY12</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>$288</td>
<td>$329</td>
<td>$349</td>
<td>$20</td>
<td>6.1%</td>
</tr>
<tr>
<td>6.2</td>
<td>$1,133</td>
<td>$1,219</td>
<td>$1,175</td>
<td>-$44</td>
<td>-3.6%</td>
</tr>
<tr>
<td>6.3</td>
<td>$1,262</td>
<td>$1,196</td>
<td>$1,222</td>
<td>$26</td>
<td>2.2%</td>
</tr>
<tr>
<td>Total</td>
<td>$2,683</td>
<td>$2,744</td>
<td>$2,746</td>
<td>$2</td>
<td>0.1%</td>
</tr>
</tbody>
</table>
## FY13 Request

(Selected accounts, in millions)

<table>
<thead>
<tr>
<th></th>
<th>FY11</th>
<th>FY12 Final</th>
<th>FY13 PBR</th>
<th>$ change</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Def. Res. Sci</strong></td>
<td>$288</td>
<td>$291</td>
<td>$309</td>
<td>$18</td>
<td>6.2%</td>
</tr>
<tr>
<td><strong>Math and CS</strong></td>
<td>$53</td>
<td>$59</td>
<td>$68</td>
<td>$9</td>
<td>15.3%</td>
</tr>
<tr>
<td><strong>Cyber Sciences</strong></td>
<td>0</td>
<td>$17</td>
<td>$25</td>
<td>$8</td>
<td>47.1%</td>
</tr>
<tr>
<td><strong>Transformative Sci</strong></td>
<td>$21</td>
<td>$38</td>
<td>$47</td>
<td>$9</td>
<td>23.7%</td>
</tr>
<tr>
<td><strong>ICT</strong></td>
<td>$240</td>
<td>$354</td>
<td>$392</td>
<td>$38</td>
<td>10.7%</td>
</tr>
<tr>
<td><strong>CCS</strong></td>
<td>$82</td>
<td>$49</td>
<td>$30</td>
<td>-$19</td>
<td>-38.8%</td>
</tr>
<tr>
<td><strong>Machine Intelligence</strong>*</td>
<td>$35</td>
<td>$52</td>
<td>0</td>
<td>-52</td>
<td>-100.0%</td>
</tr>
</tbody>
</table>

*Program has been transferred to the Tactical Technology line*
## FY12 Request

(in millions)

<table>
<thead>
<tr>
<th></th>
<th>FY11</th>
<th>FY12 Final</th>
<th>FY13 PBR</th>
<th>$ change</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSF</td>
<td>$1,189.4</td>
<td>$1,138.3</td>
<td>$1,207.0</td>
<td>$68.7</td>
<td>5.7%</td>
</tr>
<tr>
<td>DOD</td>
<td>$749.9</td>
<td>$694.1</td>
<td>$654.0</td>
<td>-$40.1</td>
<td>-6.1%</td>
</tr>
<tr>
<td>NIH</td>
<td>$551.0</td>
<td>$553.0</td>
<td>$551.0</td>
<td>-$2.0</td>
<td>-0.4%</td>
</tr>
<tr>
<td>DOE</td>
<td>$489.2</td>
<td>$542.5</td>
<td>$568.5</td>
<td>$26.0</td>
<td>4.6%</td>
</tr>
<tr>
<td>DARPA</td>
<td>$436.0</td>
<td>$489.0</td>
<td>$462.0</td>
<td>-$27.0</td>
<td>-5.8%</td>
</tr>
<tr>
<td>NIST</td>
<td>$78.3</td>
<td>$100.2</td>
<td>$116.7</td>
<td>$16.5</td>
<td>14.1%</td>
</tr>
<tr>
<td>NASA</td>
<td>$94.3</td>
<td>$102.6</td>
<td>$100.4</td>
<td>-$2.2</td>
<td>-2.2%</td>
</tr>
<tr>
<td>DHS</td>
<td>$47.0</td>
<td>$47.0</td>
<td>$64.0</td>
<td>$17.0</td>
<td>26.6%</td>
</tr>
<tr>
<td>AHRQ</td>
<td>$27.6</td>
<td>$25.6</td>
<td>$25.6</td>
<td>$0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>NOAA</td>
<td>$26.3</td>
<td>$22.0</td>
<td>$25.6</td>
<td>$3.6</td>
<td>14.1%</td>
</tr>
<tr>
<td>DOE/NNSA</td>
<td>$30.0</td>
<td>$18.0</td>
<td>$25.0</td>
<td>$7.0</td>
<td>28.0%</td>
</tr>
<tr>
<td>EPA</td>
<td>$6.0</td>
<td>$6.0</td>
<td>$6.0</td>
<td>$0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>NARA</td>
<td>$2.0</td>
<td>$1.0</td>
<td>$1.0</td>
<td>$0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$3,727</strong></td>
<td><strong>$3,739.30</strong></td>
<td><strong>$3,807.8</strong></td>
<td><strong>$68.5</strong></td>
<td><strong>1.8%</strong></td>
</tr>
</tbody>
</table>
FY13 Appropriations
What do we know now?

NSF in House
+$299 million
4.3% increase

NSF in Senate
+$240 million
3.4% increase
What do we know now?

NIST in House
+$76 million
13.8% increase

NIST in Senate
+$79 million
14.2% increase
What do we know now?

DOE in House

-$69$ million

1.6% decrease

DOE in Senate

+$29$ million

0.6% increase
What do we know now?

DOE’s ASCR in House
+$1 million
Essentially Flat

DOE’s ASCR in Senate
+$15 million
3.3% increase
What do we know now?

DOD Research (6.1, 6.2) in House

- $172 million

2.5% decrease

DARPA in House

+ $11 million

0.4% increase
Appropriations
Endgame?
No clue.
+ Probably not before election
+ Probably not before election
+ Short- or long-term CR?
+ Probably not before election
+ Short- or long-term CR?
+ Omnibus/Minibus?
Growth in Mandatory Spending vs. Discretionary

- Discretionary
- Mandatory
- Net Interest

Years: 2009 to 2020

Values: 0, 1500, 3000, 4500, 6000

The chart shows the growth in mandatory spending compared to discretionary spending from 2009 to 2020.
Running the government on 8¢

By 2020, four big items could suck up 92% of tax dollars

Everything else: Children’s nutrition, Border security, Food safety and inspection, Disaster relief, Forest service, Drug Enforcement Administration, Public housing, IRS, Animal & plant health inspection, Federal courts, Bureau of Indian Affairs, NASA, Army, National Endowment for the Arts, Air Force, Federal student loans, Marines, Rural development, U.S. Coast Guard, Food stamps, National park service, Income assistance, Family services, Research and development, U.S. Geological Survey, Environmental Protection Agency, Centers for Disease Control, FEMA, Immigration and customs, Secret Service, FAA, Housing for the elderly, Federal Railroad Administration, Navy, Bureau of Land Management, Federal prison system, Peace Corps, FCC, State Department, National Science Foundation, Congress, Fish and Wildlife Service, White House, SEC, Smithsonian Institute, Small Business Administration, FBI, Federal Highway Admin...
Sequestration
How did we get here?
How did we get here?
How did we get here?
Supercommittee’s job: Find a way to trim $1.2 trillion over 10 years.

Failure will trigger automatic cuts across the board.
Interest: $250 billion

Mandatory: $2.2 trillion

Discretionary: $1.27 trillion
Discretionary $1.27 trillion
Discretionary
$1.27 trillion
Discretionary $1.05 trillion
FY13 Spending Limits

Defense
$546 billion

Nondefense
$501 billion
FY13 Spending Limits

Defense $546 billion

Nondefense $501 billion

9.9% Sequester
FY13 Spending Limits

Defense $546 billion

9.9% Sequester

Nondefense $501 billion

7.8% Sequester
What does this mean?

+ Jan 2, 2013, agency budgets cut across-the-board;
+ Some debate about how this might work;
+ OMB intends to cut as equally as possible.
Very little discretion for FY13

Beginning in FY14, Congress would have more discretion to make cuts
So, is this going to happen??
So, is this going to happen??

Who knows?...
Growth in Mandatory Spending vs. Discretionary

- **Discretionary**
- **Mandatory**
- **Net Interest**

<table>
<thead>
<tr>
<th>Year</th>
<th>Discretionary</th>
<th>Mandatory</th>
<th>Net Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>1500</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>1500</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>1500</td>
<td>3000</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>1500</td>
<td>3000</td>
<td></td>
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Keep making the case...
Keep making the case...

+ Congressional Testimony
Keep making the case...

+ Congressional Testimony
+ Host events, sponsor others
Keep making the case...

+ Congressional Testimony
+ Host events, sponsor others
Deconstructing The iPad

How Federally Supported Research Leads to Game-Changing Innovation
+ Improve opportunities at other mission agencies
+ Improve opportunities at other mission agencies
+ Improve the pathway to funded initiatives
+ Improve opportunities at other mission agencies

+ Improve the pathway to funded initiatives

+ Make sure the community is represented on advisory boards and in national initiatives
+ Improve opportunities at other mission agencies
+ Improve the pathway to funded initiatives
+ Make sure the community is represented on advisory boards and in national initiatives
+ Continue to support our partners
We’re looking for your help, too!

CRA Fall Congressional Fly-in
September 11-12, 2012

http://link.cra.org/2012fall-fly-in
LiSPI
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We want your nominations!
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With your help, we'll continue to make the case for computing research wherever we can.
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Sabrina @sbrinamj
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