

# VIEW FROM THE GOVERNMENT AFFAIRS COMMITTEE

CCC Council Meeting, March 2016

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Computing Research Association







## THE PLAN

- How did FY 2016 approps finish up?
- What does the President's budget look like?
- Does it have any chance?
  
- Some other stuff we're up to...

## QUICK RECAP

- Boehner resigns speakership to get deal on CR
- McCarthy flames out, so Boehner sticks around
- Boehner forges 2-year budget deal - 5.2 percent increase for FY 2016; 2 percent in FY 2017
- Paul Ryan becomes Speaker – first task, finish appropriations

## WHAT WE HOPED TO SEE...

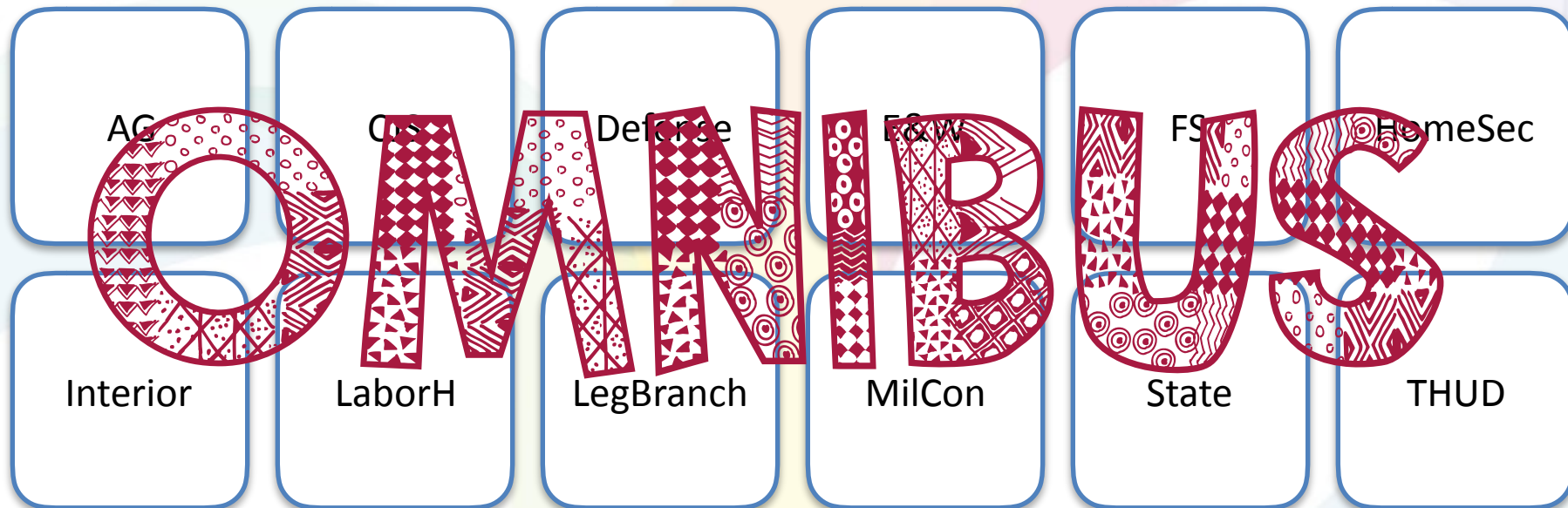
- Federal science agencies with increases that match the overall increases for discretionary spending in FY 2016 - about 5.2 percent
- Priority in FY 2017, where the overall non-defense discretionary increase is just 2 percent, while defense discretionary increases nearly 5 percent

# STATUS OF FY2016 APPROPRIATIONS AS OF NOVEMBER 2015



Not completed  
 Completed

# STATUS OF FY2016 APPROPRIATIONS AS OF NOVEMBER 2015



- Not completed
- Completed



# FY 2016 OMNIBUS APPROPRIATIONS

- \$1.1 trillion
- “Winners”
  - Department of Energy
  - National Institutes of Health
  - NASA
- “Also Rans”
  - National Science Foundation
  - Department of Defense

## NATIONAL SCIENCE FOUNDATION FY 2016 APPROPRIATIONS

- \$7.46 billion overall, \$119 million or 1.6 percent more than FY 2015 appropriation
- \$119 million more than Senate Approps version
- \$69 million more than the House Approps version
- R&RA receives \$100 million more than FY 15, 1.7 percent
- (current rate of inflation = 1.4 percent)

# NATIONAL SCIENCE FOUNDATION FY 2016 APPROPRIATIONS

(in millions)

	<i>FY 2015 Actual</i>	<i>FY 2016 Approps</i>	<i>% change</i>
<b>BIO</b>	\$736.19	\$744.17	1.1%
<b>CISE</b>	\$932.98	\$935.82	0.3%
<b>ENG</b>	\$923.53	\$916.19	-0.8%
<b>GEO</b>	\$1,319.04	\$1,318.54	0.0%
<b>MPS</b>	\$1,376.32	\$1,349.15	-2%
<b>SBE</b>	\$276.19	\$272.20	-1.4%
<b>TOTAL R&amp;RA</b>	<b>\$6041.57</b>	<b>\$6033.65</b>	<b>-0.1%</b>

Total R&RA includes funding for Office of International Science and Engineering, Integrative Activities, and the U.S. Arctic Research Commission

# DEPARTMENT OF DEFENSE FY 2016 APPROPRIATIONS

(in millions)

	<i>FY 2015 Actual</i>	<i>FY 2016 Approps</i>	<i>% change</i>
<b>6.1 Basic</b>	\$2,278	\$2,309	1.4%
<b>6.2 Applied</b>	\$4,648	\$5,004	7.7%
<b>6.3 Advanced Tech Development</b>	\$5,326	\$5,937	11.5%
<b>DARPA</b>	\$2,920	\$2,891	-0.9%

# DEPARTMENT OF ENERGY FY 2016 APPROPRIATIONS

(in millions)

	<i>FY 2015 Actual</i>	<i>FY 2016 Approps</i>	<i>% change</i>
<b>Office of Science</b>	\$5,068	\$5,350	5.6%
<b>ASCR</b>	\$541	\$621	14.8%

- Exascale receives \$157.9 million (vs. \$177 million in PBR)
- Computing Labs all receive request or +\$10 million
- Computational Science Grad Fellows - \$10 million

## OTHER WINNERS IN THE FY 2016 APPROPRIATIONS OMNIBUS

- NASA receives 7 percent, or \$1.27 billion more than in FY 2015
  - Science programs receive 6.6 percent increase
  - Space Tech - 15.2 percent; Exploration - 20.6 percent
- National Institutes of Health receives a \$2 billion, a 6.6 percent increase over FY 2015

## FY 2016 APPROPRIATIONS OMNIBUS

- So, with a 5.2 percent increase to the discretionary spending cap...
  - NSF - 1.7 percent
  - DOD Basic Research - 1.4 percent
  - DOE ASCR - 14 percent
  - NIH - 6.6 percent
  - NASA - 7 percent
- On to FY 2017, with a 2 percent discretionary spending cap (for non-defense spending)....

# **PRESIDENT OBAMA'S LAST BUDGET**





- Constrained to the discretionary spending increase he agreed to in the budget deal
  - 2 percent for NDD;
  - 5 percent for Defense
- \$4.2 trillion budget

## FY 2017 BUDGET REQUEST

- 4 percent increase to R&D,  
6 percent increase for basic and applied research
- 6.7 percent increase for NSF
- Budget doesn't bust caps!
  
- How is this possible?...



## FY 2017 BUDGET REQUEST

- 4 percent increase to R&D,  
6 percent increase for basic and applied research
- 6.7 percent increase for NSF
- Budget doesn't bust caps!
  
- How is this possible?...
  
- It's not, really. :(

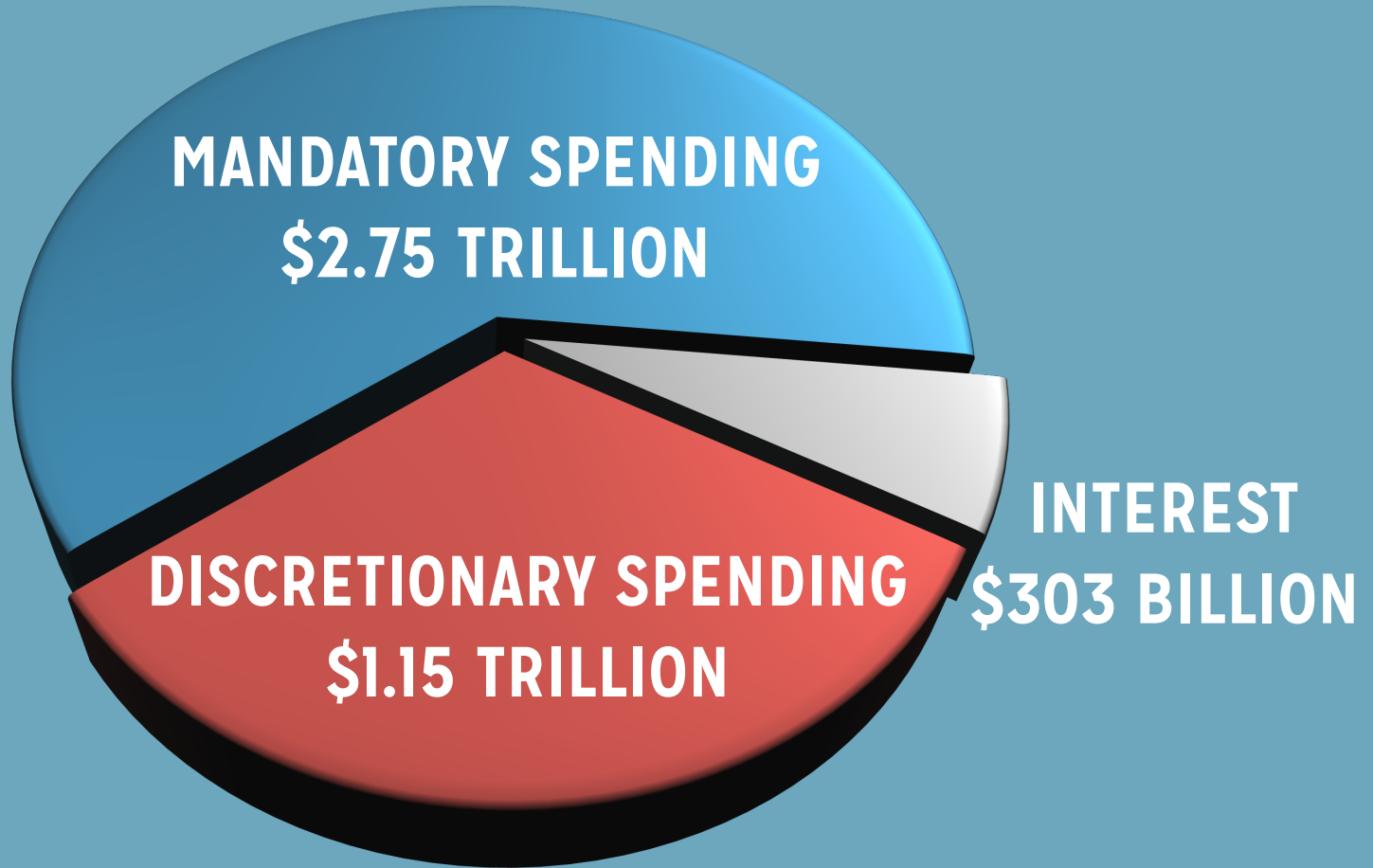


# FY 2017 FEDERAL BUDGET

**\$4.2 TRILLION**

A large, three-dimensional red oval with a black shadow is centered on the page. Inside the oval, the text '\$4.2 TRILLION' is written in white, bold, sans-serif font.

# FY 2017 FEDERAL BUDGET



## FY 2017 BUDGET REQUEST

- President is proposing an end-run around discretionary caps by adopting “one-time” mandatory funding streams for many key research lines
- This new spending would be outside normal approps process and require legislation and Congressional approval
- Likelihood...looooooow.



## FY 2017 BUDGET REQUEST

- “Aspirational Budget”
- Disappointingly unrealistic
- Admire the creativity, but sends a troubling signal to appropriators
  - President couldn’t justify investments in science under tight budget caps. Other programs were more deserving of discretionary funds....
- Some R&D did receive discretionary funds...

## COMPUTER SCIENCE FOR ALL

- “In the new economy, computer science isn’t an optional skill – it’s a basic skill, right along with the three ‘Rs.’”
- \$4 billion for states over 3 years to increase access to K-12 CS Ed
- \$120 million over five years from NSF to support and train CS teachers.
- Mostly mandatory spending, but this is as much about prominence as it is actual dollars





# NATIONAL SCIENCE FOUNDATION FY 2017 BUDGET REQUEST

- Funds 82 percent of all fundamental computer science at U.S. universities (actually down a few %)
- Request asks for 6.7 percent increase in fake money
- 1.3 percent increase in discretionary funding
- CISE would see a 6.3 percent increase in fake money
- 0.3 percent in discretionary funding

# NATIONAL SCIENCE FOUNDATION FY 2017 BUDGET REQUEST

(in millions)

	<i>FY 2016 Approps</i>	<i>FY 2017 PBR (Discretionary)</i>	<i>% change</i>
<b>BIO</b>	\$744.17	\$745.73	0.2%
<b>CISE</b>	\$935.82	\$938.43	0.3%
<b>ENG</b>	\$916.19	\$946.41	3.3%
<b>GEO</b>	\$1,318.54	\$1,319.56	0.1%
<b>MPS</b>	\$1,349.15	\$1,355.06	0.4%
<b>SBE</b>	\$272.20	\$272.41	0.1%
<b>TOTAL R&amp;RA</b>	<b>\$6033.65</b>	<b>\$6,079.43</b>	<b>0.8%</b>

Total R&RA includes funding for Office of International Science and Engineering, Integrative Activities, and the U.S. Arctic Research Commission

# DEPARTMENT OF ENERGY FY 2017 BUDGET REQUEST

(in millions)

	<i>FY 2016 Approps</i>	<i>FY 2017 PBR (Discretionary)</i>	<i>% change</i>
<b>Office of Science</b>	\$5,347	\$5,572	4.2%
<b>ASCR</b>	\$621	\$663	6.8%

- New Exascale Computing Project line (SC-ECP) - \$154 million
  - Includes reprogrammed funding from Applied Mathematics (-\$10M), Computer Science (-\$17.5M), and Computational Partnerships (-\$2.3M)
  - Likely more translational, less foundational

## DEPARTMENT OF ENERGY FY 2017 BUDGET REQUEST

- ARPA-E would increase 71.8 percent in fake money (growing from \$262M to \$500M in FY17)
- Goal is to hit \$1 billion in five years, as *RAGS* report recommended
- ARPA-E would increase 21.5 percent, to \$318 million, using discretionary funds (also unlikely)

# DEPARTMENT OF DEFENSE FY 2017 BUDGET REQUEST

(in millions)

	<i>FY 2016 Approps</i>	<i>FY 2017 Request</i>	<i>% change</i>
<b>6.1 Basic</b>	\$2,309	\$2,100	-9%
<b>6.2 Applied</b>	\$5,004	\$4,800	-3.6%
<b>6.3 Advanced Tech Development</b>	\$5,731	\$5,584	-2.6%
<b>DARPA</b>	\$2,797	\$2,899	3.7%

## PROGNOSIS

- Great bulk of the President's request is not DOA
- New mandatory funding streams are probably DOA
- Freedom Caucus and other elements of the GOP are pushing for a return to the sequestration levels (ie, abandon the “overly generous” budget deal)
- Election year – nothing resolved until post-Nov 8th, and maybe not even then.

## ONE BRIGHT SPOT

- “I think it’s important that we not insert political agendas from either end of the political spectrum.”
  - CJS Appropriations Subcommittee Chair John Culberson on his opposition to directorate-level funding for NSF
- Would also like to see more decadal-type surveys to help guide NSF’s priority setting.
- Reps. Richard Hanna (R-NY) and David Price (D-NC)  
Dear Colleague opposing directorate-level funding

## SOME BRIGHT SPOTS

- “I really want to cut the Office of Management and Budget [OMB] out of the loop for NASA and the National Science Foundation. I don’t think the bureaucratic bean counters at OMB should be substituting their judgement for the work that you do.” - Culberson



# OTHER ISSUES

## INTERNET OF THINGS

- Developing Innovation and Growing the Internet of Things (DIGIT) Act (S. 2607)– national strategy for IoT.
- Sens. Fischer (R-NE), Ayotte (R-NH), Booker (D-NJ) and Schatz (D-HI)
- Focused on spectrum needs, regs, consumer protection, privacy and security, use of tech by Feds
- No obvious research piece
- CRA Response, with CCC help

“While the DIGIT Act captures the interests of many of the stakeholders in IoT, we ask that you consider a focus on the continued need for research by expanding the scope of the strategic planning called for in the Act to include the need to identify and solve research challenges constraining progress in this area.”



March 11, 2016

The Honorable Deb Fischer  
454 Russell Senate Office Building  
Washington, DC 20510

The Honorable Kelly Ayotte  
144 Russell Senate Office Building  
Washington, DC 20510

The Honorable Cory A. Booker  
359 Dirksen Senate Office Building  
Washington, DC 20510

The Honorable Brian Schatz  
722 Hart Senate Office Building  
Washington, DC 20510

Dear Senators Fischer, Ayotte, Booker, and Schatz:

As an organization representing more than 200 PhD-granting computing departments, 14 industrial research labs, and six affiliated professional computing societies, the Computing Research Association commends you for the introduction of S. 2607, the Developing Innovation and Growing the Internet of Things (DIGIT) Act. We appreciate your efforts to establish a national strategy on the Internet of Things in thoughtful anticipation of the large impact this technology will have on the United States and its citizens. CRA's member institutions are deeply involved in this area, identifying and leading work on the research challenges that, once solved, will enable the full potential of the Internet of Things (IoT).

While the DIGIT Act captures the interests of many of the stakeholders in IoT, we ask that you consider a focus on the continued need for research by expanding the scope of the strategic planning called for in the Act to include the need to identify and solve research challenges constraining progress in this area.

CRA itself is helping lead this research effort through the work of our Computing Community Consortium, chartered to anticipate and enable high-impact research in the computing research community. The CCC has established a task force – chaired by Ben Zorn from Microsoft Research and Shwetak Patel from the University of Washington – that seeks to identify and delineate the research challenges created by the Internet of Things and related technologies that connect computing to the physical world. Over the last year this task force has been establishing consensus from the computing community around the research challenges created by IoT and has prepared white papers specifically outlining some of these challenges for the area in general<sup>1</sup> and for the specific topic of Smart Communities<sup>2</sup> as well.

These activities have led us to articulate a number of key areas of research that will overcome current and future barriers to the widespread development and adoption of IoT. Among these, we would in particular highlight that existing best practices in building robust and secure systems are insufficient to address the new challenges that IoT systems will present. IoT systems will be more deeply embedded into our daily lives and people will interact with and depend on them more than any previous computer systems. IoT systems

<sup>1</sup> "Systems Computing Challenges in the Internet of Things"  
<http://cra.org/ccf/wp-content/uploads/sites/2/2015/09/loSystemsChallenges.pdf>

<sup>2</sup> "Smart Communities Internet of Things"  
<http://cra.org/ccf/wp-content/uploads/sites/2/2015/01/SmartCity-whitepaper-v9.pdf>

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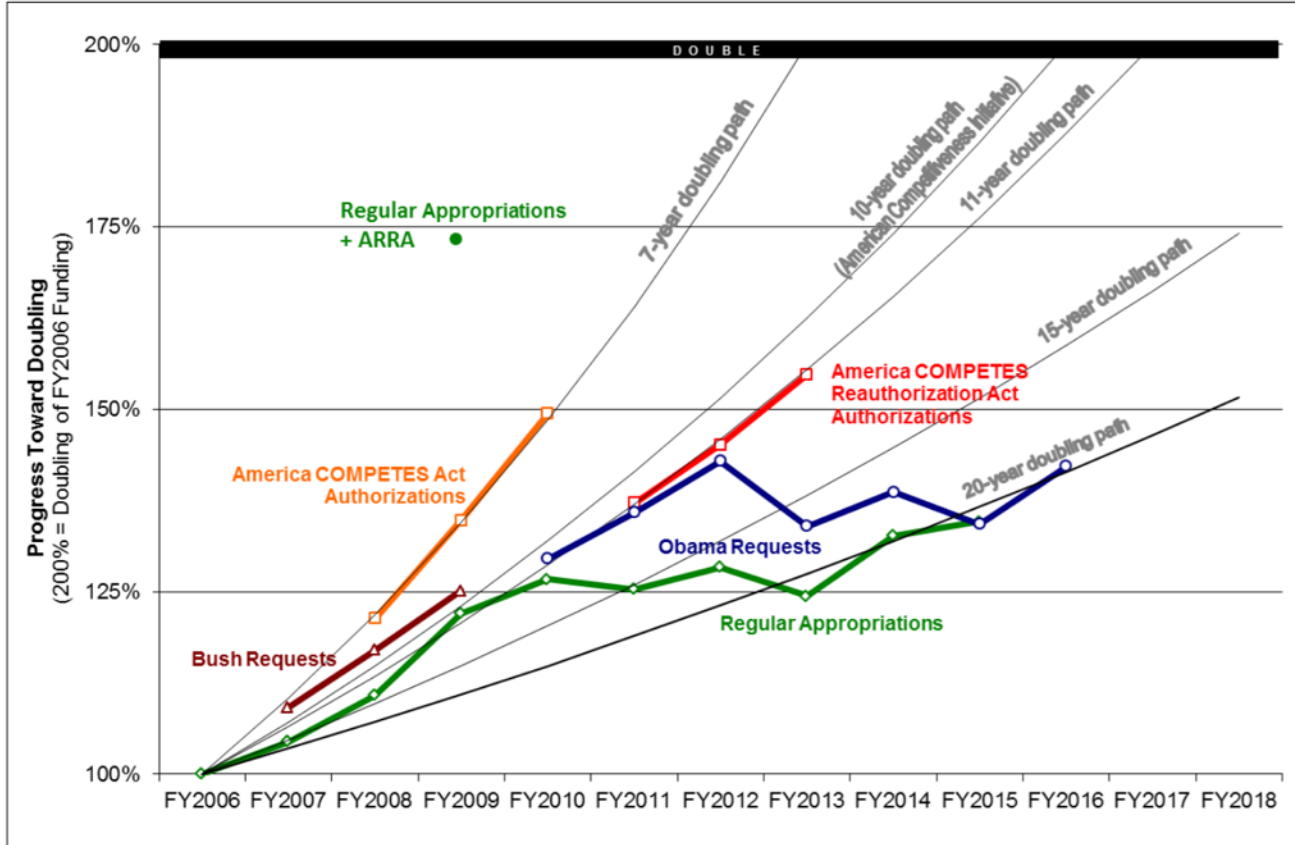
## AMERICA COMPETES REAUTHORIZATION

- House bill passed in May 2015
  - CRA opposed cuts to SBE, funding levels in FY17, other onerous language
- Senate still considering its options
  - CRA filed comments with Commerce TF working on reauthorization urging strong support for fundamental research investments
  - CVD visits in September carried message
  - Numerous meetings with Senate staff involved

# AMERICA COMPETES REAUTHORIZATION

- Expect a Senate version “soon”

**Figure 1. Funding for Accounts Targeted for Doubling: Appropriations, Authorizations, and Requests versus Selected Doubling Rates**

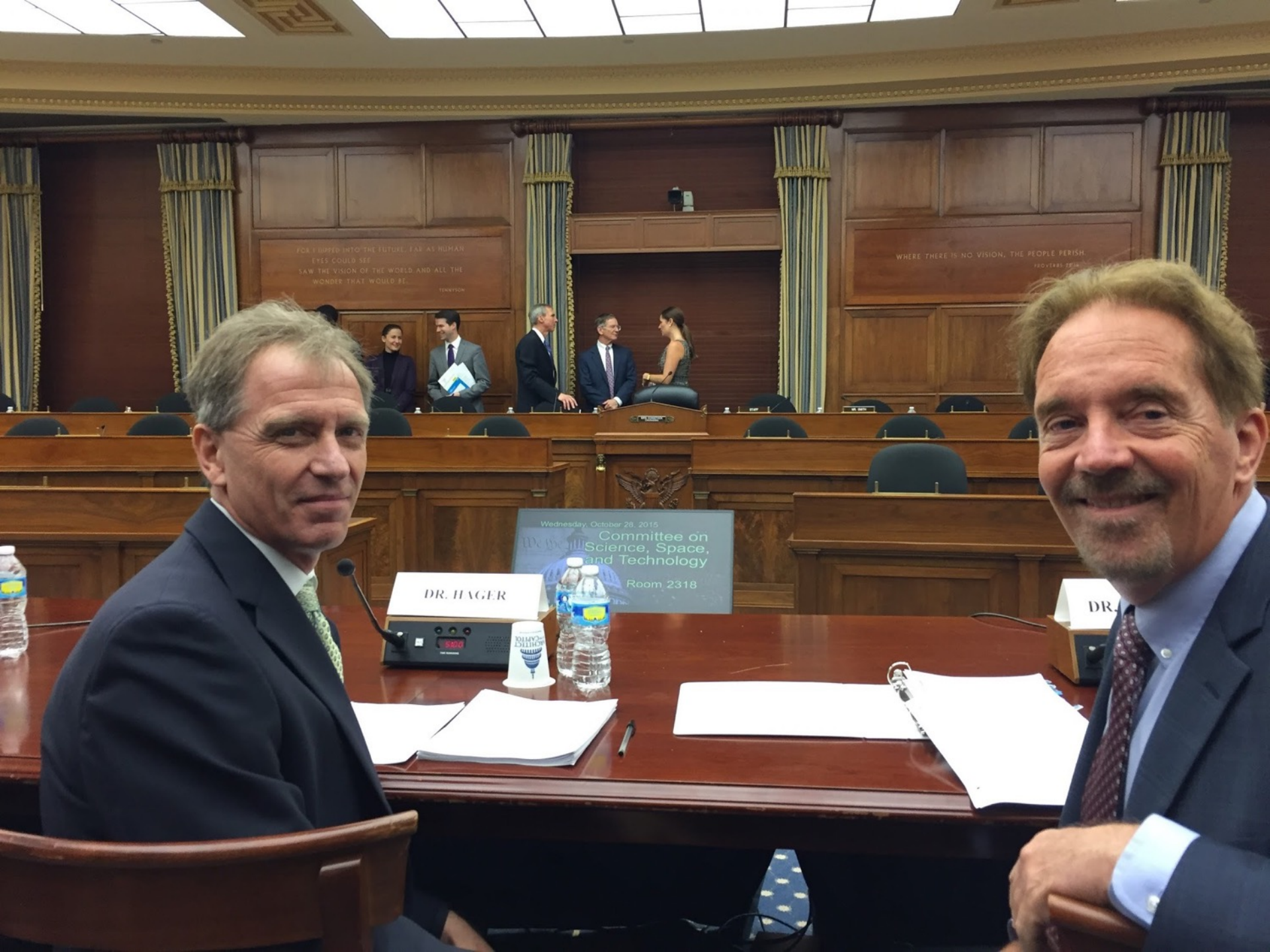


**Sources:** Prepared by CRS based on data from the Office of Management and Budget and agency budget justifications for FY2008 to FY2016, the NSF Budget Internet Information System, and agency authorization levels from the America COMPETES Act (P.L. 110-69) and the America COMPETES Reauthorization Act of 2010 (P.L. 111-358).

**Notes:** The 7-year doubling pace represents annual increases of 10.4%, the 10-year doubling pace represents annual increases of 7.2%, the 11-year doubling pace represents annual increases of 6.5%, the 15-year doubling pace represents annual increases of 4.7%, and the 20-year doubling pace represents annual increases of 3.3%. Through compounding, these rates would achieve the doubling of funding in the specified time period. The lines connecting aggregate appropriations, authorizations, and requests for the targeted accounts are for clarification purposes only.

## NITRD REAUTHORIZATION

- House Science, Space and Tech committee took first step in process with hearing on Oct 16th
- CCC Council Chair Greg Hager testified in his role as co-chair of PCAST working group on NITRD



FOR I DIPPED INTO THE FUTURE, FOR AS HUMAN EYES COULD SEE, I SAW THE VISION OF THE WORLD AND ALL THE WONDER THAT WOULD BE.  
TIMOTHY

WHERE THERE IS NO VISION, THE PEOPLE PERISH.  
PROVERBS 29:18

Wednesday, October 28, 2015  
Committee on Science, Space, and Technology  
Room 2318

DR. HAGER

DR.



## NITRD REAUTHORIZATION

- House Science, Space and Tech committee took first step in process with hearing on Oct 16th
- CCC Council Chair Greg Hager testified in his role as co-chair of PCAST working group on NITRD
- PCAST findings and recommendations would likely form the basis for any NITRD reauthorization
- Minority lamented the lack of participation of Industry in hearing.

**OTHER THINGS WE'RE DOING...**

# CRA BOARD MEMBER CONGRESSIONAL FLY-IN FEBRUARY 2016



Next Opportunity is our Fall Fly-in in September 2016 (either Sept 14th, or 21st)



## POTENTIAL CONGRESSIONAL BRIEFINGS AHEAD....

- Robotics Caucus briefing on a Revitalization of the National Robotics Initiative, now 5 years old
- IOT Research challenges briefing – based on CCC whitepaper
- Robotics Roadmap Unveiling in Fall 2016 or Winter 2017?
- Others?...

**THANKS!**

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