

# Computing Community Consortium

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Director

Northwestern University  
October 6, 2011



<http://cra.org/ccc>



# What is the CCC?

- Established in 2006 through a multi-year cooperative agreement between the National Science Foundation and CRA
- A standing committee of CRA
- Provides a voice for the national computing research community
- Facilitates the development of a bold, multi-themed vision for computing research - and communicates this vision to stakeholders

# A broad-based Council

## Leadership:

- Ed Lazowska, U of Washington (Chair)
- Susan Graham, UC-Berkeley (Vice-Chair)
- Erwin Gianchandani, CRA (Director)

## Terms ending 2014:

- Deborah Crawford, Drexel
- Gregory Hager, Johns Hopkins
- John Mitchell, Stanford
- Bob Sproull (ret.)
- Josep Torrellas, UIUC

## Terms ending 2013:

- Randy Bryant, CMU
- Lance Fortnow, Northwestern
- Eric Horvitz, Microsoft Research
- Hank Korth, Lehigh
- Beth Mynatt, Georgia Tech
- Fred Schneider, Cornell
- Margo Seltzer, Harvard

## Terms ending 2012:

- Stephanie Forrest, U of New Mexico
- Chris Johnson, U of Utah
- Anita Jones, U of Virginia
- Frans Kaashoek, MIT
- Ran Libeskind-Hadas, Harvey Mudd
- Robin Murphy, Texas A&M

## Rotated off:

- Greg Andrews, U of Arizona (ret.) (2009)
- Bill Feiereisen, Intel (2011)
- Dave Kaeli, Northeastern (2011)
- Dick Karp, UC-Berkeley (2010)
- John King, U of Michigan (2011)
- Peter Lee, Microsoft Research (2009)
- Andrew McCallum, U-Mass (2010)
- Karen Sutherland, Augsburg U (2009)
- Dave Waltz, Columbia (2010)

*Meets three times a year, including an annual summer meeting in Washington, DC*



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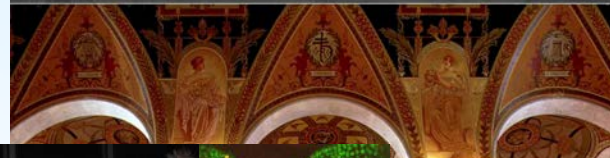


# A multitude of activities

- **Community-initiated visioning:**
  - Workshops that bring researchers together to discuss “out-of-the-box” ideas
  - Challenges & Visions tracks at conferences
- **Outreach to the White House, Federal funding agencies:**
  - Outputs of visioning activities
  - Short reports to inform policy makers
  - Task Forces -- Health IT, Sustainability IT, and Data Analytics



## Computing Research That Changed The World



This Week's Highlight:  
Fruit Fly Suggests New  
Solution to Computer  
Networking Problem

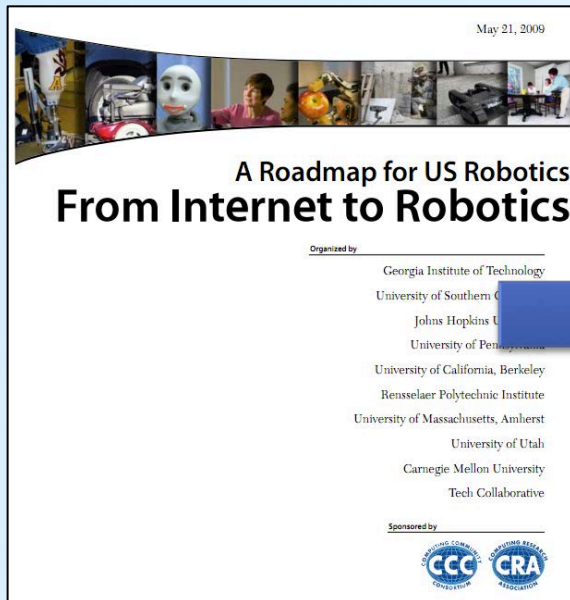
### LANDMARK CONTRIBUTIONS BY STUDENTS IN COMPUTER SCIENCE

*undergraduate and graduate students that  
have made truly game-changing contributions  
in the course of their studies*

- **Public relations efforts:**
  - Library of Congress symposia
  - Research “Highlight of the Week”
  - CCC Blog [<http://cccblog.org/>]
- **Nurturing the next generation of leaders:**
  - Computing Innovation Fellows Project
  - “Landmark Contributions by Students”
  - Leadership in Science Policy Institute



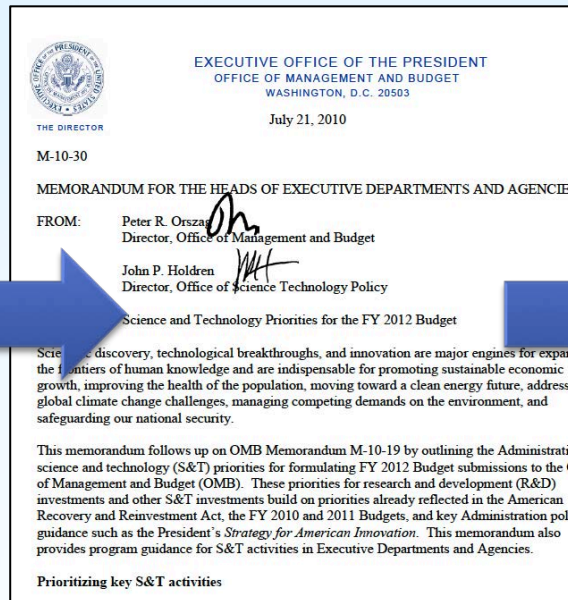
# Example: Robotics visioning



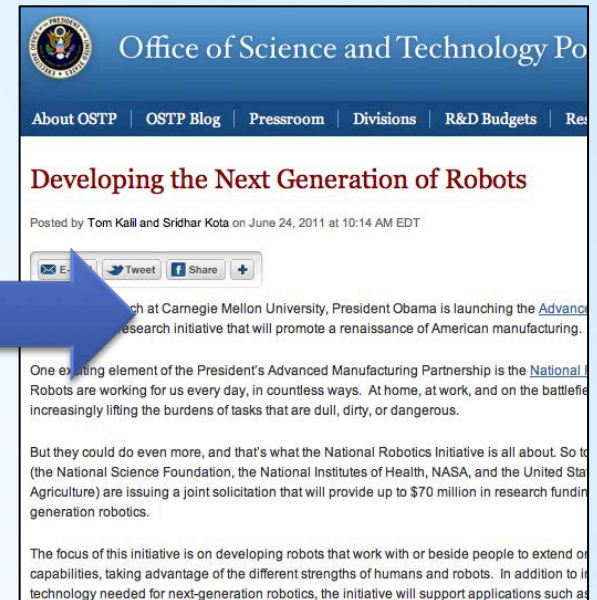
4 meetings during  
summer 2008

Roadmap published  
May 2009

*Extensive discussions  
between visioning  
leaders & agencies*



OSTP issues directive  
to all agencies  
to include robotics in  
FY 12 budgets



National Robotics  
Initiative is  
announced

Henrik Chistensen  
Georgia Tech

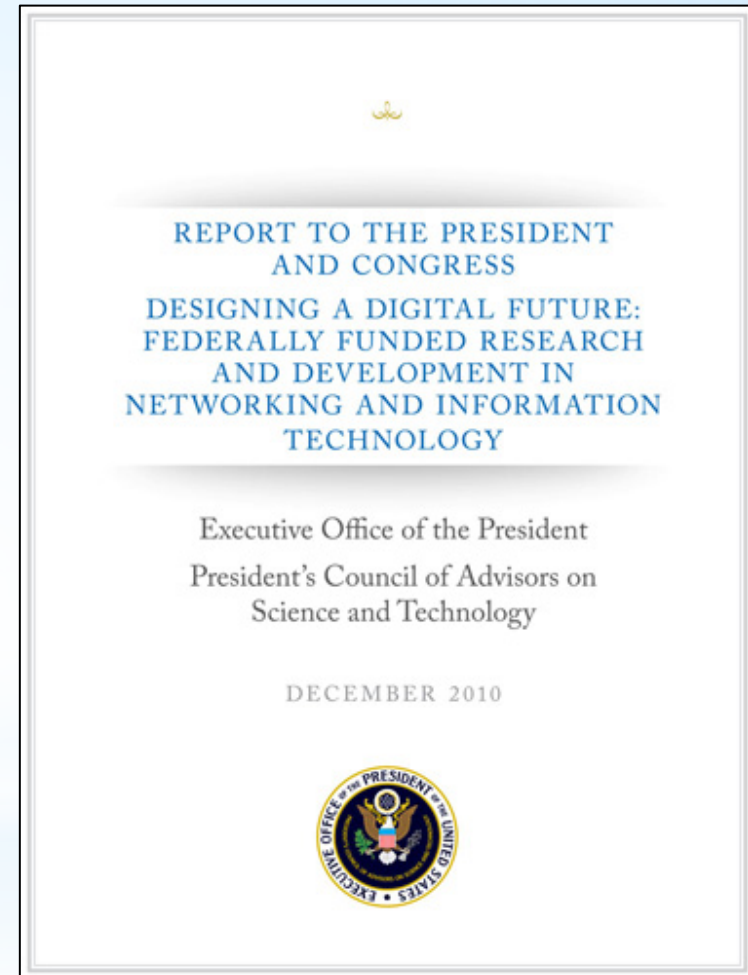


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# Example: PCAST report

- One-third of the PCAST NITRD Working Group members were CCC Council members
- The report drew extensively from CCC white papers
- An excellent roadmap for the field
- The challenge moving forward: translating it into action



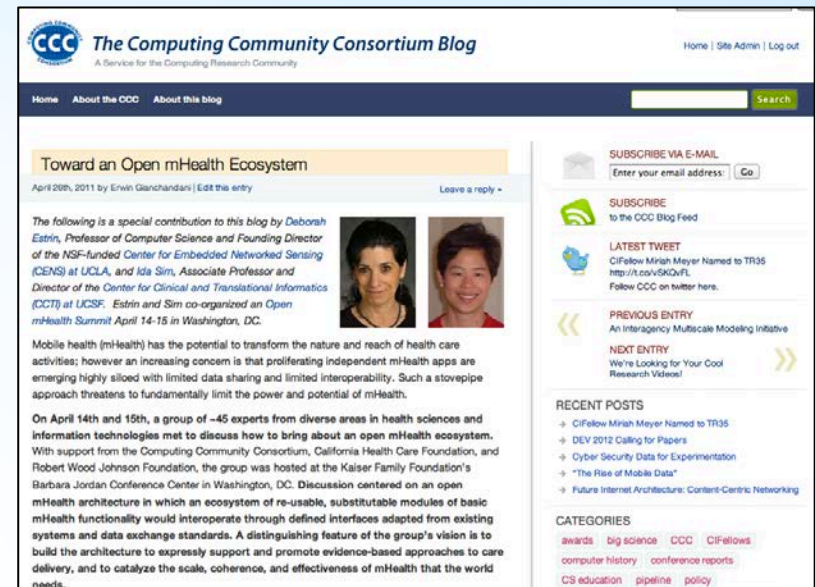
# Current areas of emphasis

- Data analytics
  - Series of white papers written for policy makers in summer 2010
  - Ongoing discussions with OSTP and Federal agencies
- Health information technology
  - Workshop held in San Francisco in October 2009
  - NSF/CISE initiative on Smart Health & Wellbeing (SHB) announced in FY 2011
- Education (Learning) Technologies
  - Roadmap produced in summer 2010
  - President's FY 12 budget would establish "ARPA-ED"
- Role of Information Sciences & Engineering in Sustainability
  - Workshop in Washington, DC, on Feb. 3-4, 2011
  - Ongoing discussions with NSF/CISE and DoE Office of Energy Efficiency & Renewable Energy



# A community effort - *we need you!*

- Propose visioning activities, white papers, Challenges & Visions tracks at research conferences
- Put together short videos for undergraduates
- Contribute to the CCC Blog
- Send us a research highlight for the Highlight of the Week



Get involved today:  
[erwin@cra.org](mailto:erwin@cra.org) or 202-266-2936  
<http://cra.org/ccc> or <http://cccblog.org/>





# Computing Research Association

Arizona State University - CSE  
 Auburn University - CSSE  
 Ball State University - CS  
 Boston College - CS  
 Boston University - CS  
 Bowdoin College - CS  
 Bowling Green State University - CS  
 Bradley University - CS  
 Brandeis University - CS  
 Brigham Young University - CS  
 Brown University - CS  
 Bryn Mawr College - MCS  
 Bucknell University - CS  
 California Institute of Technology - CS  
 California Polytechnic State University - CS  
 California State University, Chico - CS  
 Carnegie Mellon University - CS  
 Case Western Reserve University - EECS  
 City University of New York, Graduate Center - CS  
 Clemson University - CS  
 Colgate University - CS  
 College of William & Mary - CS  
 Colorado School of Mines - MCS  
 Colorado State University - CS  
 Columbia University - CS  
 Cornell University - CS  
 Cornell University - ECE  
 Dalhousie University - CS  
 Dartmouth College - CS  
 DePaul University - CS  
 Drexel University - CS  
 Drexel University - IST  
 Duke University - CS  
 Emory University - MCS  
 Florida Atlantic University - CSE  
 Florida Institute of Technology - CS  
 Florida International University - CS  
 Florida State University - CS  
 Florida State University - IS  
 George Mason University - CS  
 George Washington University - CS  
 Georgia Institute of Technology - CSE  
 Georgia Southern University - IT  
 Georgia State University - CIS  
 Georgia State University - CS  
 Grinnell College - MCS  
 Harvard University - CS  
 Harvey Mudd College - CS  
 Hofstra University - CS  
 Illinois Institute of Technology - CS  
 Illinois State University - ACS  
 Indiana University - CS  
 Indiana University - I  
 Iowa State University - CS  
 Iowa State University - ECE

Johns Hopkins University - CS  
 Johns Hopkins University - SI  
 Juniata College - IT & CS  
 Kansas State University - CIS  
 Kent State University - CS  
 Lafayette College - CS  
 Lehigh University - CSE  
 Long Island University - ICS  
 Louisiana State University - CS  
 Loyola University, Chicago - CS  
 Massachusetts Institute of Technology - EECS  
 Miami University - CS  
 McMaster University - CE&S  
 Michigan State University - CSE  
 Michigan Technological University - CS  
 Mississippi State University - CS  
 Montana State University - CS  
 Montclair State University - CS  
 National University of Singapore - CS/IS  
 Naval Postgraduate School - CS  
 New Jersey Institute of Technology - CCS  
 New Mexico State University - CS  
 New York University - CS  
 North Carolina State University - CS  
 Northeastern University - CIS  
 Northwestern University - ECE  
 Nova Southeastern University - CS  
 Oakland University - CSE  
 Ohio State University - CSE  
 Ohio State University - EECS  
 Oklahoma State University - CS  
 Old Dominion University - CS  
 Oregon Health & Science University - CSE  
 Oregon State University - EECS  
 Pace University - CSIS  
 Pennsylvania State University - CSE  
 Pennsylvania State University - IST  
 Polytechnic University - CIS  
 Pomona College - MCS  
 Portland State University - CS  
 Princeton University - CS  
 Purdue University - CS  
 Purdue University - ECE  
 Rensselaer Polytechnic Institute - CS  
 Rice University - CS  
 Rochester Institute of Technology - CS  
 Roosevelt University - CS&T  
 Rutgers University, Busch Campus - CS  
 Saint Louis University - MCS  
 Santa Clara University - CE  
 Simon Fraser University - CS  
 Singapore Management University - IS  
 Southern Illinois University, Carbondale - CS  
 Southern Methodist University - CSE  
 Southern Polytechnic State University - CSE

Stanford University - CS  
 State University of New York, Albany - CS  
 State University of New York, Binghamton - CS  
 State University of New York, Stony Brook - CS  
 Stevens Institute of Technology - CS  
 Swarthmore College - CS  
 Syracuse University - IS  
 Temple University - CIS  
 Texas A&M University - CS  
 Texas State University - CS  
 Toyota Technological Institute at Chicago - CS  
 Tufts University - CS  
 Tulane University - EECS  
 Union College - CS  
 University at Buffalo - CSE  
 University at Buffalo - IS  
 University of Alabama, Birmingham - CIS  
 University of Alabama, Tuscaloosa - CS  
 University of Alberta - CS  
 University of Arizona - CS  
 University of Arkansas - CSCE  
 University of Arkansas at Little Rock - I  
 University of Calgary - CS  
 University of California, Berkeley - EECS  
 University of California, Berkeley - IMS  
 University of California, Davis - CS  
 University of California, Irvine - ICS  
 University of California, Los Angeles - CS  
 University of California, Riverside - CSE  
 University of California, San Diego - CSE  
 University of California, Santa Barbara - CS  
 University of California, Santa Cruz - CE  
 University of California, Santa Cruz - CS  
 University of Central Florida - CS  
 University of Chicago - CS  
 University of Cincinnati - ECECS  
 University of Colorado, Boulder - CS  
 University of Delaware - CIS  
 University of Denver - CS  
 University of Florida - CISE  
 University of Georgia - CS  
 University of Hawaii - ICS  
 University of Houston - CS  
 University of Houston - ECE  
 University of Idaho - CS  
 University of Illinois, Chicago - CS  
 University of Illinois, Urbana Champaign - CS  
 University of Illinois, Urbana Champaign - ECE  
 University of Iowa - CS  
 University of Kansas - EECS  
 University of Kentucky - CS  
 University of Louisiana at Lafayette - CACS  
 University of Louisville - CECS  
 University of Maine - CS  
 University of Maryland - CS

University of Maryland, Baltimore Co - CSEE  
 University of Maryland, Baltimore Co - IS  
 University of Massachusetts, Amherst - CS  
 University of Massachusetts, Boston - CS  
 University of Michigan - EECS  
 University of Michigan - I  
 University of Michigan, Dearborn - CIS  
 University of Minnesota - CSE  
 University of Minnesota, Duluth - CS  
 University of Mississippi - CIS  
 University of Missouri, Columbia - CS  
 University of Missouri, Rolla - CS  
 University of Montana - CS  
 University of Montreal - CS  
 University of Nebraska at Omaha - CS/IST  
 University of Nebraska, Lincoln - CSE  
 University of Nevada, Las Vegas - CS  
 University of Nevada, Reno - CSE  
 University of New Brunswick - CS  
 University of New Hampshire - CS  
 University of New Mexico - CS  
 University of New Mexico - ECE  
 University of North Carolina at Chapel Hill - CS  
 University of North Carolina at Chapel Hill - SILS  
 University of North Carolina, Charlotte - IT  
 University of North Dakota - CS  
 University of North Texas - CS  
 University of Notre Dame - CSE  
 University of Oklahoma - CS  
 University of Oregon - CIS  
 University of Pennsylvania - CIS  
 University of Pittsburgh - CS  
 University of Pittsburgh - IS  
 University of Puget Sound - MCS  
 University of Rochester - CS  
 University of South Alabama - CIS  
 University of South Carolina - CSE  
 University of South Florida - CSE  
 University of Southern California - CS  
 University of Southern California - EES  
 University of Tennessee, Knoxville - CS  
 University of Texas, Arlington - CSE  
 University of Texas, Austin - CS  
 University of Texas, Dallas - CS  
 University of Texas, El Paso - CS  
 University of Toronto - CS  
 University of Tulsa - MCS  
 University of Utah - CS  
 University of Virginia - CS  
 University of Washington - CSE  
 University of Washington - I  
 University of Washington, Bothell - CS  
 University of Washington, Tacoma - CSS  
 University of Waterloo - CS  
 University of Wisconsin, Madison - CS

University of Wisconsin, Milwaukee - EECS  
 University of Wyoming - CS  
 Utah State University - CS  
 Vanderbilt University - EECS  
 Virginia Commonwealth University - CS  
 Virginia Tech - CS  
 Wake Forest University - CS  
 Washington State University - EECS  
 Washington University in St. Louis - CS  
 Wayne State University - CS  
 West Virginia University - CSEE  
 Western Michigan University - CS  
 Williams College - CS  
 Worcester Polytechnic Institute - CS  
 Wright State University - CSE  
 Yale University - CS  
 York University - CS

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 Microsoft Corporation (Sustaining Member)  
 IBM Research (Supporting Member)

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 Argonne National Laboratory  
 Avaya  
 CA Labs  
 Computer Science Research Institute,  
 Sandia National Labs  
 Fraunhofer Center for  
 Experimental Software Engineering  
 Fujitsu Laboratories of America  
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 IDA Center for Computing Sciences  
 Intel Corporation  
 Lawrence Berkeley National Laboratory  
 Los Alamos National Laboratory  
 Lucent Technologies, Bell Labs  
 McAfee Research  
 Mitsubishi Electric Research Labs  
 National Center for Atmospheric Research  
 NCSA  
 NEC Laboratories America  
 NTT DoCoMo USA Labs  
 Pacific Northwest National Laboratory  
 Panasonic Information &  
 Networking Technologies Lab  
 Ricoh Innovations  
 San Diego Supercomputer Center  
 SAP Labs  
 SRI International  
 Telcordia Technologies

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# Mission and activities



- Strengthen research and education in the computing fields
  - Working to influence **policy** that impacts computing research
  - Encouraging the development of **human resources**
- Contributing to the cohesiveness of the professional **community**

Gov't. Affairs



- Collect and disseminate **information** about the importance and state of computing research

**Table 1. PhD Production by Type of Department and Rank**

Department, Rank	PhDs Produced	Avg. per Dept.	PhDs Next Year	Avg. per Dept.
US CS 1-12	208	26.2	288	26.2
US CS 13-24	215	20.1	241	20.1
US CS 25-36	117	17.1	205	17.1
US CS Other	816	8.4	962	8.4
<b>US CS Total</b>	<b>1,501</b>	<b>10.0</b>	<b>1,696</b>	<b>11.3</b>

Taulbee Survey

