

# CRA's Computing Community Consortium

Ed Lazowska

Bill & Melinda Gates Chair in  
Computer Science & Engineering  
University of Washington

Chair  
Computing Community Consortium

<http://cra.org/ccc>

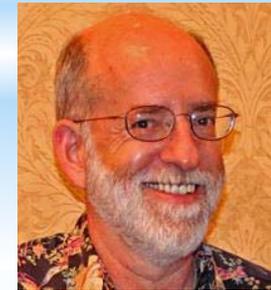


<http://cra.org/ccc>



# The Computing Community Consortium is ...

- A standing committee of CRA
- Funded by NSF under a Cooperative Agreement
- Focused on catalyzing and empowering the computing research community to pursue more audacious research
- Led by a broad-based Council
- Chaired by Ed Lazowska (Ch.) and Susan Graham (V.Ch.)
- Staffed by CRA (Erwin Gianchandani and Andy Bernat)



# The CCC Council

- Leadership
  - Ed Lazowska, Chair
  - Susan Graham, Vice Chair
  - Erwin Gianchandani, Director
  - Andy Bernat, CRA
- Terms ending 2014
  - Deborah Crawford
  - Gregory Hager
  - John Mitchell
  - Bob Sproull
  - Josep Torrellas
- Terms ending 2013
  - Randy Bryant
  - Lance Fortnow
  - Hank Korth
  - Eric Horvitz
  - Beth Mynatt
  - Fred Schneider
  - Margo Seltzer
- Terms ending 2012
  - Stephanie Forrest
  - Chris Johnson
  - Anita Jones
  - Frans Kaashoek
  - Ran Libeskind-Hadas
  - Robin Murphy
- Rotated off
  - Bill Feiereisen, 2011
  - Dave Kaeli, 2011
  - John King, 2011
  - Dick Karp, 2010
  - Andrew McCallum, 2010
  - Dave Waltz, 2010
  - Greg Andrews, 2009
  - Peter Lee, 2009
  - Karen Sutherland, 2009



# CCC's activities include ...

- Outreach activities for computing researchers
  - Countless talks
  - Countless articles

**The Computing Community Consortium:  
Stimulating Bigger Thinking**

**Ed Lazowska**  
Bill & Melinda Gates Chair in  
Computer Science & Engineering  
University of Washington  
Chair, Computing Community Consortium  
Tapia Conference Career Workshop  
April 2009  
<http://www.cra.org/ccc/>



**V** viewpoints  
DOI:10.1145/1378704.1378714 Ed Lazowska

**Viewpoint**  
**Envisioning the Future  
of Computing Research**  
*Advances in computing have changed our lives—the Computing Community Consortium aims to help the research community continue that lineage.*

**H**OW CAN we work together to establish, articulate, and pursue compelling visions for our field—visions that will shape the intellectual future of the field, that will catalyze research investment and public support, and that will attract the best and brightest minds of a new generation? The National Science Foundation

many Internet hosts. It was only 10 years ago that Deep Blue—a supercomputer by any definition—defeated world chess champion Garry Kasparov. Today, thanks more to progress in software than to progress in hardware, you can download for your PC a chess engine with a rating 10% higher than any human player. Most of the strategic conse-

try: timesharing, computer graphics, networking (LANs and the Internet), personal workstation computing, windows and the graphical user interface, RISC architectures, modern integrated circuit design, RAID storage, and parallel computing. In each case, the role of federally sponsored research was clear. The next generation of this kind of

- CCC Blog
  - Discussion of research-related topics
- Computing Research Highlight of the Week
  - Exposure for research-related press releases



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- CCC sessions at FCRC, Snowbird

- FCRC 2007

- Christos Papadimitriou, UC Berkeley: *The Algorithmic Lens: How the Computational Perspective is Transforming the Sciences*
    - Bob Colwell, Independent Consultant: *Computer Architecture Futures 2007*
    - Randal Bryant, Carnegie Mellon University: *Data-Intensive Scalable Computing: Taking Google-Style Computing Beyond Web Search*
    - Scott Shenker, UC Berkeley: *We Dream of GENI: Exploring Radical Network Designs*
    - Ed Lazowska, University of Washington and Chair, Computing Community Consortium: *Computer Science: Past, Present and Future*



- Snowbird 2010

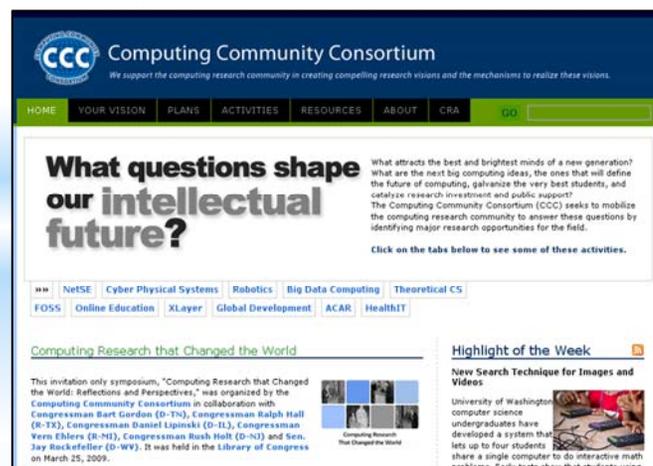
- Peter Lee, DARPA; Andrew McPherson, Penn->Drexel; Mariah Meyer, Utah->Harvard; Antonina Mitrofanova, NYU->Columbia: *The Computing Innovation Fellows Project*
- Randal Bryant, CMU; David Culler, UC Berkeley; Illah Nourbakhsh, CMU; Shwetak Patel, University of Washington: *Achieving Sustainable Energy: New Approaches Based on the Tools of Computer Science*
- Tapan Parikh, UC Berkeley; Lakshmi Subramanian, NYU; Beki Grinter, Georgia Tech: *Computer Science and Global Development: A New High-Impact Research Area*
- Ed Lazowska, University of Washington and Chair, Computing Community Consortium: *The Computing Community Consortium and You*



# CCC's activities include ...

- Engagement activities for computing researchers
  - Community-initiated activities to define new computing research directions and communicate these to the White House and funding agencies

(More than a dozen, including the future of robotics, educational technology, IT for development, the role of large-scale data analysis in all fields, interactive technologies, ...)



The screenshot shows the homepage of the Computing Community Consortium (CCC). The header features the CCC logo and the text "Computing Community Consortium" with the tagline "We support the computing research community in creating compelling research visions and the mechanisms to realize these visions." Below the header is a navigation menu with links for HOME, YOUR VISION, PLANS, ACTIVITIES, RESOURCES, ABOUT, CRA, and a search bar. The main content area has a large heading "What questions shape our intellectual future?" followed by a paragraph asking "What attracts the best and brightest minds of a new generation?" and a call to action: "Click on the tabs below to see some of these activities." Below this are two rows of tabs: the first row includes NetSE, Cyber Physical Systems, Robotics, Big Data Computing, and Theoretical CS; the second row includes FOSS, Online Education, XLayer, Global Development, ACAR, and HealthIT. There are two featured articles: "Computing Research that Changed the World" and "Highlight of the Week: New Search Technique for Images and Videos".

- Major workshops in areas where research advances in computing are essential to achieving national priorities
  - IT and Health Care
  - IT and Energy/Sustainability

The screenshot shows the CCC website with the following content:

- Header:** Computing Community Consortium logo and tagline: "We support the computing research community in creating compelling research visions and the mechanisms to realize these visions."
- Navigation:** HOME, YOUR VISION, PLANS, ACTIVITIES (highlighted), RESOURCES, ABOUT, CRA, GO.
- Menu:** NetSE, Cyber Physical Systems, Robotics, Big Data Computing, Theoretical CS, EDTECH, Open Source, XLayer, Global Development, Architecture, HealthIT, SEES-IT, Interactive Tech.
- Main Content:**
  - Discovery and Innovation in Health IT**
  - New Report Published:** May 26, 2010 - The CCC has prepared a white paper titled *Information Technology Research Challenges for Healthcare: From Discovery to Delivery*, following on to this workshop. The paper draws its ideas from the vision for basic research and development in health IT that was articulated by leading computer scientists, systems engineers, social scientists, and medical practitioners who attended the workshop—including the need for a highly collaborative, multi-disciplinary R&D agenda driven by multiple Federal funding agencies that these experts voiced.
  - Overview:** This invitation only workshop, "Discovery and Innovation in Health IT," is sponsored by the National Science Foundation, the Office of the National Coordinator for Health Information Technology, the National Institute of Standards and Technology, the National Library of Medicine, the Agency for Healthcare Research and Quality, the Computing Community Consortium, and the American Medical Informatics Association. It will be held at the Parc 55 Hotel in San Francisco on **October 29 and 30, 2009**.
  - Session Videos:** A video player showing a man speaking, with a play button overlay. A message above the video states: "Content is still being added to this site. Please Check back periodically. The last change was made on: **May 27, 2010**."

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- Menu:** NetSE, Cyber Physical Systems, Robotics, Big Data Computing, Theoretical CS, EDTECH, Open Source, XLayer, Global Development, Architecture, HealthIT, SEES-IT, Interactive Tech.
- Main Content:**
  - Role of Information Sciences and Engineering in Sustainability (RISES)**
  - A NSF/OCC Workshop on IT and the Sustainability Enterprise**
  - Overview:** This workshop, **Role of Information Sciences and Engineering in Sustainability (RISES)**, is sponsored by the National Science Foundation and the Computing Community Consortium. It is scheduled to be held at the **Hyatt Regency Capitol Hill** on February 3 and 4, 2011.
  - The goals of the workshop are to:**
    - Explore and define fundamental research challenges and applications of the information sciences and engineering in sustainability, including energy and transportation;
    - Provide opportunities for relevant academic and industrial researchers (including computer and information scientists, systems engineers, social and behavioral scientists, etc.), practitioners (e.g., power systems engineers, electricity suppliers, etc.), and government officials to identify mutual interests, as they relate to both near- and long-term challenges and solutions; and
  - Logistics:**
    - Date:** February 3-4, 2011
    - Location:** Hyatt Regency Washington on Capitol Hill, Washington DC
    - [Room Reservation Link](#)
    - Please note that our room block is now sold out. If you would like to make a reservation, please e-mail [barbara@ccc.org](mailto:barbara@ccc.org) with your name and contact information.
    - [Hotel | Parking | Floor Plan](#)
    - [Submit White Papers](#)
  - Printer Friendly Version (PDF)**
  - Content notice:** Content is still being added to this site. Please check back periodically. The last change was made on: **February 7, 2011**.



<http://cra.org/ccc>



- “Out-of-the-Box Ideas” sessions at major conferences
  - PLDI, OSDI, CIDR, more to come
    - Existing “out-of-the-box” conferences (e.g., HotX) have gone mainstream
    - Existing “wild ideas” sessions tend to be turf-marking rather than truly revolutionary ideas

The image displays three screenshots of the Computing Community Consortium (CCC) website, illustrating the 'Out-of-the-Box Ideas' sessions at major conferences.

**Left Screenshot: PLDI's "Fun Ideas & Thoughts" Visions**  
 Title: PLDI's "Fun Ideas & Thoughts" Visions  
 Date: July 26th, 2010 by Erwin Gianchandani  
 Content: The Computing Community Consortium is interested in stimulating the development of new research visions and challenges in computing research. Research conferences in computer science and sponsoring the most exciting submissions. One such example is PLDI (Programming Languages Design and Implementation) held in Toronto, Canada.

**Middle Screenshot: Research Visions at OSDI '10**  
 Title: Research Visions at OSDI '10  
 Date: October 7th, 2010 by Erwin Gianchandani  
 Content: The CCC is interested in stimulating the development of new research so, the CCC has been collaborating with conferences in computer science (sometimes called "crazy ideas") sessions with travel awards. Following the success at PLDI's "Fun Ideas and Thoughts" session, the CCC sponsored the Research Vision session at the 9th Symposium on Operating Systems Implementation (OSDI), held Oct 4-6, 2010, in Vancouver. In collaboration with the OSDI committee, the CCC is happy to announce that it will be sponsoring a series of "wacky ideas" sessions at several major conferences.

**Right Screenshot: "Outrageous Ideas" at CIDR: Seeking to Stimulate Innovative Research Directions**  
 Title: "Outrageous Ideas" at CIDR: Seeking to Stimulate Innovative Research Directions  
 Date: January 18th, 2011 by Erwin Gianchandani  
 Content: Researchers frequently lament the predictable framework of published papers. The constraints of a rigorous review process discriminate against unconventional work and ideas that are innovative but not yet fully worked out. **As part of its mission to identify major new research opportunities, the CCC is sponsoring a series of "wacky ideas" sessions at several** major conferences.  
 Image: 5th Biennial Conference on Innovative Data Systems Research



# CCC's activities include ...

- Outreach activities for policymakers
  - Library of Congress Symposium: “Computing Research That Changed The World”
    - 13 presentations; a great set of videos and overview papers for students
  - Landmark Contributions by Students in Computer Science
    - Prepared as part of the DARPA leadership transition



## Landmark Contributions by Students in Computer Science

Version 11: September 15, 2009

There are many reasons for research funding agencies (DARPA, NSF, etc.) to invest in the education of students. Producing the next generation of innovators is the most obvious one. In addition, though, there are an impressive number of instances in our field in which undergraduate and graduate students have made truly game-changing contributions in the course of their studies.

The inspiring list below was compiled by the following individuals and their colleagues: Bill Bonvillian (MIT), Susan Graham (Berkeley), Anita Jones (University of Virginia), Ed Lazowska (University of Washington), Pat Lincoln (SRI), Fred Schneider (Cornell), and Victor Zue (MIT).

We solicit your suggestions for additional student contributions of comparable impact – post them on the Computing Community Consortium blog, <http://www.cccb.org/2009/08/28/landmark-contributions-by-students-in-computer-science/>, or send them to Ed Lazowska, [lazowska@cs.washington.edu](mailto:lazowska@cs.washington.edu).

- “White papers” on the many roles of computing research, prepared for the Transition Team, the White House, and various agencies

(Roughly 20, including emergency informatics; broadband; cybersecurity; transportation; energy; synthetic biology; networking; robotics; quality-of-life technology; a series on data analytics in a broad range of fields; quantum computing; cyber-physical systems; ...)



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- Fundamental Research in Engineering (Word version) (Ed Lazowska, University of Washington and Peter Lee, Carnegie Mellon University)
- Information Technology R&D and U.S. Innovation (Word version) (Peter Harsha, Computing Research Association, Ed Lazowska, University of Washington, and Peter Lee, Carnegie Mellon University)
- Re-E envisioning DARPA (Word version) (Peter Lee, Carnegie Mellon University and Randy H. Katz, UC Berkeley)
- Unleashing Waves of Innovation: Transformative Broadband for America's Future (Word version)
- Infrastructure for eScience and eLearning in Higher Education (Word version) (Unattributed PDF) (Ed Lazowska, University of Washington, Peter Lee, Carnegie Mellon University, Chip Elliott, BBN Technologies, and Larry Smarr, UCSD)
- Security is Not a Commodity: The Road Forward for Cybersecurity Research (Word version) (Stefan Savage, UC San Diego, and Fred B. Schneider, Cornell University)
- Information Technology and America's Energy Future (Word version) (David Waltz, Columbia University, and John King, University of Michigan)
- Surface Transportation 3.0 (Word version) (Sebastian Thrun, Stanford University, and Henry Kelly, Federation of American Scientists)
- "Smart Grid": R&D for an Intelligent 21st Century Electrical Energy Distribution Infrastructure (Word version) (Randy H. Katz, UC Berkeley)
- Synthetic Biology (Word version) (Drew Endy, Stanford, and Ed Lazowska, University of Washington)



<http://cra.org/ccc>



# CCC's activities include ...

- Outreach activities for undergraduates
  - Undergraduate Research Opportunities - <http://cra.org/ccc/uro-zone>

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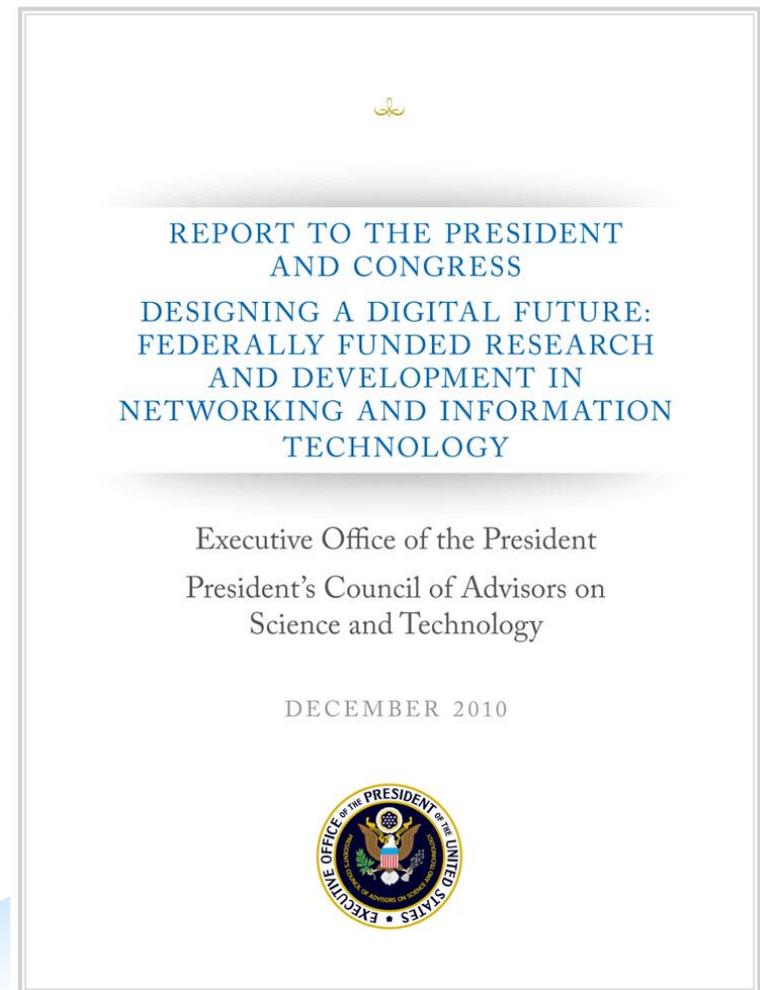
# CCC's activities include ...

- The Computing Innovation Fellows project
  - A stimulus-motivated project
  - Has placed more than 100 new graduates with postdoctoral mentors in the past 2 years
  - “Max 2 rule” ensures broad institutional participation



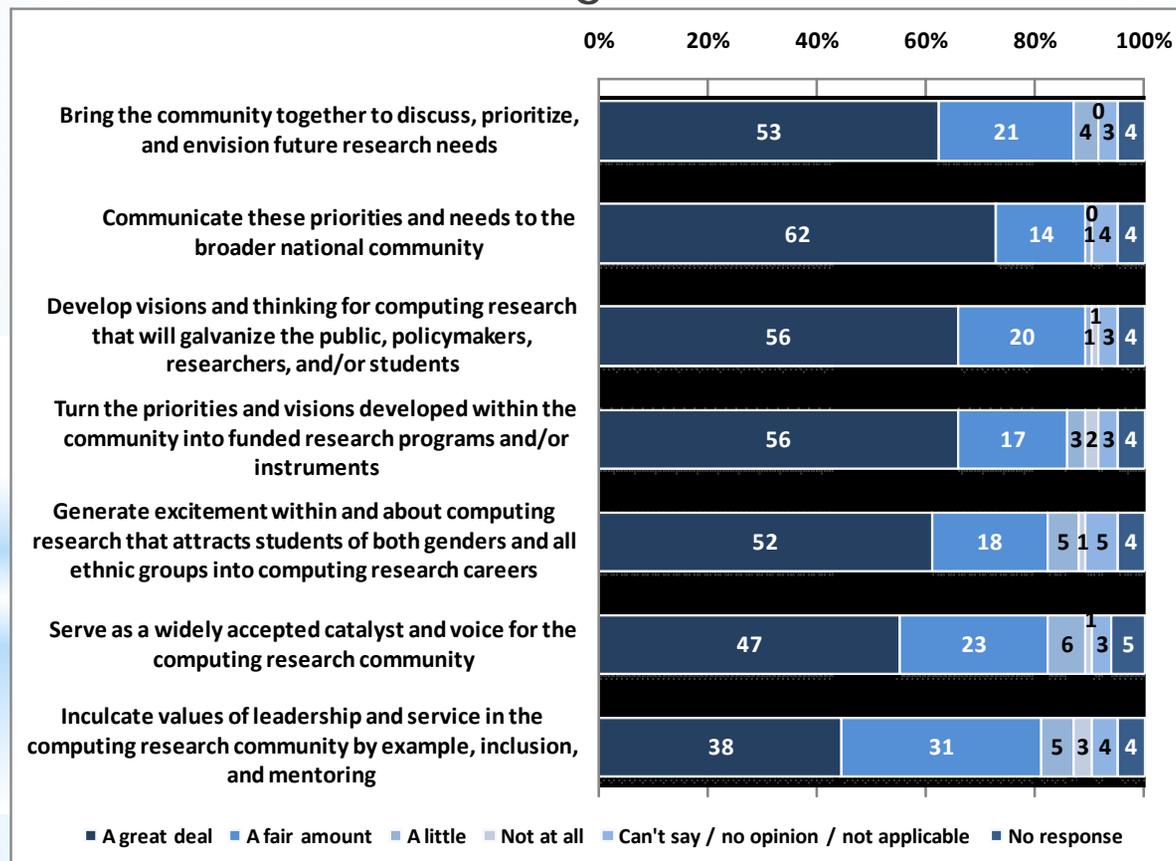
# CCC's activities include ...

- Just being there
  - 1/3 of the PCAST NITRD Working Group members, plus one of the two co-chairs, were CCC Council members



# SRI assessment - ~800 responses

- “How necessary is it to have within the U.S. computing research community an organization designated to perform one or more of the following activities?”



# Participate!

- The CCC is all of us!
- The CCC is part of CRA!



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