COMPUTING COMMUNITY CONSORTIUM

The **mission** of Computing Research Association's Computing Community Consortium (CCC) is to **catalyze** the computing research community and **enable** the pursuit of innovative, high-impact research.

Computing Research Community

National Priorities | **Agency Requests** | **Blue Sky Ideas** | **Open Visioning Calls**

Council-Led Workshops | **Community Visioning**

Reports • White Papers Roadmaps • New Leaders

Public | **Funding Agencies** | **Science Policy Leadership**

Promote Audacious Thinking:
- Community Initiated Visioning Workshops
- Blue Sky Ideas tracks at conferences

Communicate to the Community:
- CCC Blog - http://cccblog.org/
- Great Innovative Ideas
- White Papers and Workshop Reports
- Social Media
- Council member presentations

Facilitate Investment:
- Outputs of visioning activities
- Task Forces – Health, AI, Privacy etc.
- Engage with federal agencies and industry

Inculcate Leadership and Service:
- Engage with CCC Alumni and Sister Organizations
- Biennial Symposia series

Influence Early Career Researchers:
- Industry – Academic Collaborations
- Leadership in Science Policy Institute
- Postdoc Best Practices

CCC UPDATE FOR CRA BOARD
JULY 2017

Intelligent Infrastructure White Paper Series

CCC Renewal Proposal and Challenges Ahead

Timely update (CCC mtg yesterday)

AAAS

INTELLIGENT INFRASTRUCTURE WHITE PAPERS

- Inform potential legislative agenda
- Make the case for basic research
- Draw out relevance for multiple domains / agencies

- Partner with ECEDHA
- Rapid writing process (~2 weeks)
  - Discuss CCC exec (Mar 6)
  - Brief lead authors (Mar 14)
  - Publish (Mar 28)
  - First agency visits (Mar 30)
- New papers published
  (Privacy, Rural Infrastructure, Wireless)

Papers on:
- Research Agenda for Intelligent Infrastructure
- Transportation and Mobility
- Energy (Smart Grid)
- Disaster Management, Community Resilience and Public Safety
- City Scale Intelligent Systems and Platforms
- Food, Energy, and Water
- Safety and Security for II

- 49 authors (32 non CCC)
- 33 institutions

CCC RENEWAL PROPOSAL

Foster proactive engagement

– Increase the *scale and capacity* of the CCC by broadening the role and composition of CCC task forces

– Increase *outreach* with computing research community … and interactions with industry, sister organizations, philanthropic stakeholders

Build more opportunities for junior faculty engagement

– Increase participation in visioning workshops and encourage opportunities to learn about and engage science policy leadership

Expand our methods of communication and outreach

ENVISIONING FUTURE COMPUTING RESEARCH

"The Computing Community Consortium (CCC) solicits proposals that will galvanize the community to define visions and agendas for exciting frontiers of computing research."

- Create a new community of researchers.
- Inform a new funding initiative.
- Help an extant community define a new trajectory.

Goals for next phase

- Increase the participation of industry leadership and early career researchers at Visioning Workshops
- Expand the adoption of Blue Sky tracks and increase presence at computing conferences

Establish a biennial symposium to communicate the role of computing research to address national and societal priorities

- Held first symposium in 2016
- Bring in early career researchers

- Planned topics for 2017
  - Intelligent Infrastructure for our Cities and Communities
  - Security and Privacy for a Democratic Society
  - AI and Amplifying Human Abilities
  - Algorithms and Fairness: Overcoming Human and Computational Bias

CCC
Computing Community Consortium
Catalyst

ENGAGING AND ALIGNING WITH NATIONAL AND COMPUTING RESEARCH PRIORITIES

- Agility to respond to requests and ideas.
- Outreach pulls together visioning with stakeholder needs and timely opportunities

- Increase scale and capacity through CCC Task Forces
- Increase engagement with industry, sister organizations and other relevant stakeholders (philanthropy)

CCC
Computing Community Consortium
Catalyst

CCC TASK FORCES

CCC task forces are organized around national priorities, community needs, and council member interests.

Goal is for CCC to be **engaged in ongoing activities** around these topics, to **identify needs and opportunities** in the topic area, and to **identify actions** (generating white papers, convening a workshop, publicizing information, etc.) that have the possibility of "moving the needle" for these topics.
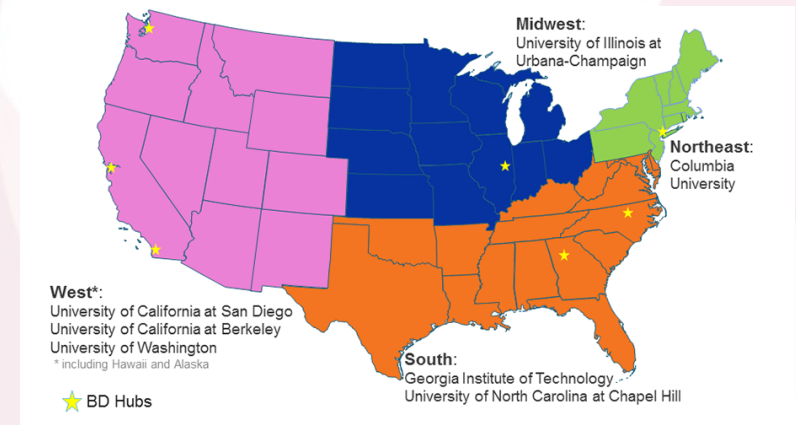
Annual process to determine topics, membership and priorities. Informed by major stakeholders (NSF, OSTP, PCAST, NITRD, workshops and council members).

As of yesterday, our current set of topics are:
- Artificial Intelligence
- Cybersecurity
- Human Technology Frontier
- Intelligent Infrastructure
- Post Moore's Law Computing
- Privacy and Fairness

ENGAGING WITH INDUSTRY

- Working with industry leadership in planning CCC workshops

- Hosting CCC activities at industry events

- Cultivating and working with federal-industry partnerships

- Engaging non profits and industry consortia

- Taking a broad view on computing industry

Platforms for Advanced Wireless Research (PAWR)

Midwest:
University of Illinois at Urbana-Champaign

Northeast:
Columbia University

West*:
University of California at San Diego
University of California at Berkeley
University of Washington
* including Hawaii and Alaska

South:
Georgia Institute of Technology
University of North Carolina at Chapel Hill

⭐ BD Hubs

Partnership on AI
to benefit people and society

ENGAGEMENT WITH SISTER ORGANIZATIONS

- Coordinate our actions with relevant organizations such as the CISE Advisory Council

- Collaborate with ACM and IEEE

- Tap into research networks such as the NSF Big Data Regional Innovation Hubs, Metro Lab Smart City network, …

- Collaborate with other discipline consortia such as MForesight: Alliance for Manufacturing Foresight and ECEDHA
    - Partnered with MForesight in March, 2017 workshop on cybersecurity for manufacturers
    - Partnered with ECEDHA on Intelligent Infrastructure white paper series

AAAS UPDATE: 3 PROPOSALS ACCEPTED

- AI Augmenting People
  - Gregory Hager, Julie Shah, Eric Horvitz
  - Moderator: Ann Drobnis

- Intelligent Infrastructure for Disaster Management, Community Resilience, and Public Safety
  - Michael Dunaway, Robin Murphy, Nalini Venkatsubramanian
  - Moderator: Dan Lopresti

- Transforming Our Cities through Advances in Intelligent Infrastructure
  - George Pappas, Charlie Catlett, Shashi Shekhar
  - Moderator: Beth Mynatt

BACKUP SLIDES

GOALS FOR CCC

1. **Bring the computing research community together to envision audacious research challenges**, and to articulate concrete pathways to enable pursuit of these challenges.

2. **Communicate** these challenges and opportunities to the broader national community.

3. **Facilitate investment** in these research challenges **by key stakeholders**.

4. **Inculcate** values of **leadership** and service by the computing research community.

5. **Inform and influence early career researchers** to engage in these community-led research challenges.

DESIRED OUTCOMES

1. **Create broad awareness of the role computing research will play in future science and technology advances** within federal agencies, philanthropic organizations, and industry through concrete examples and products.

2. **Facilitate broad engagement of the computing research community** in identifying and articulating new directions for computing research, in shaping priorities for those new directions, and in responding to existing opportunities in the computing research ecosystem.

3. **Create high-impact tangible resources** that inform stakeholders as to the current and potential impact of computing research.

4. **Sustain the CCC** as a widely accepted catalyst and voice for the computing research community.

5. **Grow leadership and community capacity** to engage in and respond to national science policy needs.

PLANNED ACTIVITIES

- Envisioning Future Computing Research

- Engaging and Aligning with National and Computing Research Priorities

- Communicating Future Computing Research

- Cultivating Computing Leadership and Community Capacity to Engage and Respond to National Priorities

VISIONING ACTIVITIES

- Over 40 visioning activities in 10-year history
- Average of 6 activities per year in the last 4 years
- Research areas include:
  - Smart and Pervasive Health
  - Nanotechnology-inspired Information Processing Systems
  - Cyber Social Learning Systems
  - Privacy by Design
  - BRAIN Initiative
  - Inclusive Access
  - Personalized Education
- 13 workshop reports released in past 4 years
- 20 white papers released in past 4 years

Workshop	Date
Privacy by Design – Catalyzing Privacy by Design	January 6-7, 2016
Robotics	March 5 and 11, 2016
Cyber-Social Learning Systems Workshop 1	August 29-30, 2016
Nanotechnology-Inspired Information Processing Systems of the Future	August 31-September 1, 2016
Cyber-Social Learning Systems Workshop 2	November 2-3, 2016
Discovery and Innovation in Smart and Pervasive Health	December 5-6, 2016
Sociotechnical Cybersecurity Workshop 1	December 12-13, 2016
Cyber-Social Learning Systems Workshop 3	January 24-25, 2017
Cyber Security for Manufacturers	March 14-15, 2017

BLUE SKY Conference Venues	Date	Location
International Symposium on Robotics Research 2017	December 2017	Puerto Varas, Chile
Sixteenth International Conference on Autonomous Agents and MultiAgent Systems (AAMAS)	May 2017	Sao Paulo, Brazil
24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL 2016)	November 2016	San Francisco, CA
38th International Conference on Software Engineering (ICSE)	May 2016	Austin, TX
Fifteenth International Conference on Autonomous Agents and MultiAgent Systems (AAMAS)	May 2016	Singapore
Thirtieth Association for the Advancement of Artificial Intelligence (AAAI) Conference on Artificial Intelligence (AAAI-16)	February 2016	Phoenix, AZ

NURTURING NEXT GENERATION OF LEADERS

Grow leadership and community capacity to engage in and respond to national science policy needs and identify new directions for computing research.

Leadership in Science Policy Institute
- Educates and trains computing researchers on how science policy in the U.S. is formulated and how to advocate for computing research
- Co-sponsored by CRA's Government Affairs Committee

Industry – Academic Collaborations
- CCC collaborated with Big Data Regional Hubs
- Activities to enhance the research of early career faculty

Postdoc Best Practices
- Program to study institutional support structures for postdocs
- 3 programs: University of Washington, NY ASCENT, Arizona

Computing Innovation Fellows (CIFellows) Project
- Rapidly created the CI Fellows program to preserve human capital when faculty positions became scarce with the financial crisis

OUTREACH AND COMMUNICATION

- **Increase outreach to computing community**; aligned with NSF Broadening Participation

- Create a consistent set of **collaterals for workshop reports and white papers** including high-level summaries, presentation briefs, videos and blog posts.

- **Place concrete outputs into traditional and non-traditional venues** ranging from ACM Digital Library, CACM and similar venues to mainstream press, social media and YouTube.

- Use the **CCCBlog** as our main communications channel for the computing research community. Promote the **CCC website** and its resources. Post relevant information about events and announcements on Twitter and Facebook.

- Support council members and the CCC in general **delivering presentations on visioning topics to broad audiences.**