CCC
Computing Community Consortium
Catalyst

Implementation Plan for 2016-2017

The CCC Strategic plan lays out a number of goals for the CCC, and articulates many activities it will undertake to accomplish those goals. Based on that strategic plan, we have developed the following implementation plan to guide our activities for the coming year.

Outcomes

For the coming year (2016 - 2017), the CCC will focus on the following outcomes:

1. **Increase federal agency awareness** of the role computing research must play in addressing a broad spectrum of national priorities.

2. **Engage the computing research community** in identifying 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**, such as white papers, workshop reports, and presentations that inform stakeholders (federal agencies, science policy experts, researchers, industry, and the general public) as to the current and potential impact of computing research.

4. **Grow the awareness of CCC** and the role it plays in shaping computing research in all stakeholder communities.

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

Relationship of Outcomes to Strategic Goals

The CCC Strategic plan outlines seven broad goals for the CCC. These broad goals are aligned with our desired outcomes as shown below.

1. Establish the CCC as a widely accepted catalyst and voice for the computing research community.
2. Bring the computing research community together to envision our future research challenges, needs and thrusts.
3. Communicate these challenges, needs and thrusts to the broader national community.
4. Create within the computing research community more audacious thinking.
5. See the ideas developed in the second and fourth points above turned into funded research programs.
6. Increase the excitement within computing research and use that excitement to attract students.
7. Inculcate values of leadership and service.

	Goal 1: CCC as catalyst	Goal 2: Research Community	Goal 3: Communicate broadly	Goal 4: Audacious thinking	Goal 5: Funded Programs	Goal 6: Attract Students	Goal 7: Leadership
Outcome 1: Agency Awareness	x		x				
Outcome 2: Community Engagement	x	x		x			x
Outcome 3: Tangible Resources	x	x	x		x	x	
Outcome 4: Awareness of CCC	x	x	x				x
Outcome 5: Leadership and Science Policy		x	x				x

Actions Leading to Outcomes

Here we describe the major activities that CCC will foster and support in the coming year. This year is a transition year in many respects. We are awaiting a change in federal leadership. We have new CCC leadership, and later this year, we will be submitting a new proposal for the next four years of CCC activities. Our implementation plan reflects this context. Priority actions for the upcoming year are:

- Inform research investments led by a new administration. CCC has benefited from productive engagements with OSTP and agency leadership throughout the Obama administration. We will focus much of our task force activities and white paper writing this year in an effort to inform and shape future research investments, embracing the incoming administration, and resulting from renewed agency priorities.

- Scale and strengthen our engagement with national priorities and community needs through extending our task forces to include non CCC council members and providing sustained support for those activities.

- Increase our engagement with industry leadership including informing and catalyzing opportunities for joint federal-academic-industry partnerships and reaching out to less traditional companies that nonetheless are increasingly reliant on computing research such as automotive, healthcare and financial services.

In the following we summarize our current and anticipated activities for the next year. The two final sections discuss our assessment plans for these activities as well as "stretch goals" for the CCC that indicate new directions we may pursue if the opportunities arise.

Create opportunities for community engagement: We continue to work with members of the computing community, and its stakeholders, to foster forums for the discussion and deliberation of audacious research visions.

On average, we host 7-10 workshops a year. In the past two years, since May 2014, we have had over 700 unique participants in CCC activities. In the coming year, we anticipate a roughly three-way split between workshops proposed (bottom up) by members of the research community, initiated by agency leadership (top down), and created by CCC task forces (sideways) and this portfolio will span engaging critical current topics (e.g. privacy, AI), informing ongoing research investments (e.g. robotics, health IT), and charting long-term research visions (e.g. nano-technologies, cyber-social learning systems). The proportion of these activities is close to our steady state with the exception that we may have more council initiated activities due to scaling up our task forces.

Although CCC participants from universities make up the largest percentage of workshop attendees, we have historically also reached out to members of the

research community working in industry laboratories, as there is growing interest in fostering federal-industry-academic research partnerships and programs. To that end, we plan to shift our industry strategy to engaging industry leadership, when appropriate, to join in the planning and participation in CCC workshops as a means of exploring future partnerships. While we certainly will include "traditional" industry partners, e.g. Microsoft, IBM, Google, we will also actively reach out to newer industry leaders, e.g. Facebook, Amazon, as well as companies that heavily utilize computing research although they are typically not considered computing industry such as those in automotive, healthcare and financial services.

We released a new call for Proposals for Visioning Activities in September, 2014, supported by a "Best Practices Guide" for running a Visioning Activity, from proposal formulation through workshop report dissemination to better improve the overall quality and consistency of workshops. We have hosted webinars, which are now viewable on our website, about the visioning process. We will renew our call for proposals in the fall of 2016 but acknowledge that we now experience a healthy demand for workshops on a regular basis.

To bring more audacious thinking to conferences, we have been promoting our Blue Sky Ideas Conference tracks to a broad audience. We sponsor between 4 -5 Blue Sky Ideas Conference tracks a year.

In May 2015, we created a new feature on our website called Great Innovative Ideas (GII), in which we showcase the exciting new research and ideas generated by the computing research community. We will continue to publish a new GII every month.

These activities specifically support Outcomes 1, 2, 4, and 5.

Scale and Strengthen CCC Task Forces: We have engaged in many conversations with members of the community, federal agencies, and science policy leadership. From these conversations, we reinvigorated our CCC council task forces around national priorities, community needs, and council member interests and abilities. Our current set of topics are:

- Computing in the Physical World
- Convergence of Data and Computing
- Healthcare
- Privacy
- Artificial Intelligence and Robotics

The goal of our task forces is to be aware of and 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" in that area.

An overall priority for this year is to provide more consistent support and guidance to our task forces to help them meet targeted goals. Starting in July 2016, we will move to scale the capacity and expertise in our task forces by recruiting non Council members to participate in individual task forces. We will also actively seek collaboration with similar efforts led by the CRA Board and the CISE Advisory Committee, for example.

Although we intend to scale our activities through the participation of non CCC council members and through collaboration, we nonetheless cannot sustain active engagement across the set of all possible areas, including past CCC task force topics. However, we now provide key resources on topics areas, accessible on our website. Going forward, we will not mothball or delete these resources, but work to organize our task forces to encompass active topics and topics that are being maintained for community use. This strategy will also enable us to shift a task force from maintenance to active quickly if the need arises.

Our task force topics this year are oriented to topics of general importance to the computing research community with an eye toward the federal transition. Next year, we will explore more speculative topics, such as the increasing role of computing in material science.

This action will support Outcomes 1, 2, and 3.

Improve Communications: We will continue to focus on enhancing our visibility and communication strategies. A new CCC website, with the new CCC branding, was developed in July 2015. We have revamped our communications strategy, utilizing social media and traditional channels, including association partners, to better promote our message and work to the computer science research community, federal agencies and the public as a whole.

With a focus on the new federal administration, much of our white paper writing will be oriented to our broader community including agency leadership. Later, we also will aim to repurpose those writings for papers aimed in our engagement with non-traditional industry leadership.

We will continue to make use of outside resources as necessary to shorten the time to produce outputs from activities, and we will make use of the council and our staff to communicate these products to all relevant individuals. In order to support the use of CCC reports and white papers, we are working to provide standard citation references and to provide access to these reports and white papers on commonly used digital repositories.

In 2015, we started to consistently publish 3-4 blog entries on the CCC Blog every week. We will continue to do so. Since July 7th, 2015, the number of subscribers to the CCC blog has increased by 8%. We continue to see non-subscribers viewing the blog as well.

We are active on Twitter and Facebook and will continue to use both social media platforms to share information with the community. Our Twitter followers have more than doubled since July, 2015.

We will ensure the transparency of CCC operation by ensuring that all of our operating procedures are publicly available on our website.

The focus on Communications will continue to support Outcomes 1, 2, 3, and 4.

Outreach to Agencies and Organizations: We will increase targeted outreach, with presentations about the CCC to others in the computing research community: professional societies, universities, industry, major conferences and other venues.

We actively seek opportunities to present to federal agencies, working groups, and committees that would benefit from the information resources that CCC creates. CCC Council members frequently meet with different government agency leaders in Washington, DC and share their conversations with the Council and CCC blog.

The CCC and CCC Council members are often called on by different federal agencies for a variety of different inputs: direct contributors for Reports from PCAST and NITRD, lead authors on reports for the President, testimony to Congressional Committees, spokespersons at Congressional briefings, etc.

This year, we will create targeted white papers to help inform agency-initiated investments in computing as the federal agencies transition with a new administration.

Additionally, there is growing interest in fostering federal-industry-academic research partnerships and programs. Last year, the CCC hosted a roundtable exploring common interests between the academic and industry computing communities. The CISE advisory committee has also chartered a task force to explore this issue. In light of these interests, we will increase our interactions with industry leadership and solicit their increased participation in CCC sponsored activities.

These activities will support Outcomes 1, 4, 5 and 7.

Leadership Development: We will again sponsor the Leadership in Science Policy Institute in 2017, which helps to grow leaders in the computing research community by informing them about the policy side of research and opportunities for participation.

Each of our task forces, mentioned above, has appointed chairs. We will continue to empower those leaders to take ownership of their task force and thus develop new leadership within the council itself. Each task force will have support from CCC staff based in CRA. Additionally, a member of the CCC Executive Council will advise the task forces.

In addition, we will be working with the three Postdoc Best Practices programs to create a community of support and best practices as Postdocs become more prevalent in computing. This year we will publish a report based on the experiences thus far of the programs and curating extant resources related to best practices for postdocs online.

We are also managing a program on Industry-Academic Collaboration through the four NSF-sponsored Big Data Regional Innovation Hubs. The Hubs have created plans that focus on early career researchers, include metrics for success, and will create long-term partnerships between industry partners and academic researchers. Featured activities include workshops, faculty internships, student internships, site visits, hackathons, and lecture series.

We will continue to identify ways to involve early career faculty in CCC activities. For example, 38 early career faculty were nominated to participate in our May Symposium *Computing Research: Addressing National Priorities and Societal Needs*. Overall their participation was well received and these faculty had the opportunity to interact with senior researchers and with agency representatives.

These activities are in support of Outcome 5.

Implement continuous assessment and improvement of activities: Over the past two years, we have standardized our data collection processes to help us evaluate CCC activities such as visioning workshops, special symposia, and Blue Sky Ideas Conference tracks.

For example, we survey participants after each workshop on a continuing basis. This process provides us with two forms of feedback: (1) ways to improve future workshops, and (2) ideas to evaluate the success of an activity in the long-term.

In anticipation of preparing a proposal for CCC's renewal, this year we have designed a more comprehensive survey that is currently being distributed to participants in CCC activities for the past two years, CRA members (chairs and deans), and agency representatives. The survey is organized around our desired 5 outcomes (listed on page 1). We will distribute the survey from July – September, 2016.

Finally, we have gathered more subjective responses and communications from events we hold which provide testimony as to the type of impact or response that an

event had. This includes noting when CCC is mentioned in outside articles or posts, emails we receive that provide feedback (both positive or negative) about events, and cases where material we provide is used in other documents.

This is in support of Outcomes 1, 2, 3, and 4.

Our evaluation process is supported through these metrics:

Metrics for Determining Achievement of Desired Outcomes

Participation in CCC Activities: We will continue to monitor the makeup of participants at CCC activities for diversity: gender, institutional, research area, etc. We will keep track of all participants and what activity they have participated in.

This will provide support for Outcomes 1, 2, 4, and 5.

CCC Contribution to Leadership: The CCC involves many participants in its activities, at all levels of seniority and from all areas of computing research. To the extent possible, we will continue to capture examples where CCC participation has led individuals to subsequent involvement or participation in other leadership or service activities on behalf of the computer science community.

This will provide support for Outcome 5.

Use of CCC Outputs: We will track the uses and citations of CCC white papers and workshop reports. We have established a citation system for the CCC white papers and will list the recommended citation in both the white paper section of the website and at the end of the white paper itself.

We have begun to upload past white papers to arXiv for reference and will continue to do so with new papers we produce.

This will provide guidance for Outcomes 1, 3, and 4.

Agency Requests: We will continue to track the requests to CCC from Federal Agencies, such as requests for work, postings, workshops, presentations, and so forth. We will specifically note cases where there has not heretofore been significant activity with that group or agency before.

This will provide guidance on Outcomes 1 and 2.

Communications: To actively monitor our communications, we will continue to track analytics of our website, blog, and communications to help assess our penetration within the community.

This will provide guidance on Outcomes 3 and 4.

Assessment: We will use our workshop surveys and CCC evaluation surveys to determine the effectiveness of workshops and CCC's influence in the community.

This will provide guidance on Outcome 3.

Impact of Activities: We will continue to look at the correlation between tangible outputs and new initiatives that have built on those activities. When possible, we will document correlations through direct means (e.g. citation of a white paper) and indirect means (e.g. the leader of a workshop playing a continued role to develop a community and activities around a CCC-sponsored theme).

Stretch Goals:
We will pursue the following "stretch goals" as time, resources, and opportunities present themselves:

1) Develop activities that initiate a long-term sustainable collaboration with an agency, company, group or community that has heretofore not had significant interaction with computing research.

2) Create a public event similar to our May 2016 Symposium or the 2012 NITRD symposium that appeals to a broad, non-technical audience.

3) Create independent sustainable resources for community-wide discussion of CS research frontiers, similar to the Gordon conferences, in a way that is synergistic with CCC research visioning activities.

4) Create and communicate compelling online materials (e.g. TED like videos) to foster greater awareness and excitement about computing research visions.

5) Convene an advisory group that will increase the depth and scale of CCC activities. This group could increase interactions with industry and academic leadership as well as increase interactions with CCC alumni.

6) Lead activities focused on articulating future research infrastructure needs that are appearing in multiple workshop visioning activities but require cross-cutting deliberations to identify common requirements.