# Research Visioning Best Practices

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CCC

Computing Community Consortium

Catalyst

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## Abstract

The Computing Community Consortium (CCC) plays a vital role in driving innovation within the computing research community. Its mission is to catalyze and empower researchers to pursue groundbreaking, high-impact work. To achieve this, CCC engages in research "visioning." This involves bringing together experts to explore and define future research directions collaboratively. At CCC, research visioning unfolds in three distinct stages. It begins with nucleation, where the initial seeds of a visioning proposal are sown through preparation and discussion. This leads to crystallization, the core of the process, where focused visioning activities take place, ideas are refined, and a clear research agenda emerges. Finally, broadening ensures the impact of the vision extends beyond the initial participants through ongoing communication and dissemination. This report serves as a guide to effective research visioning, offering valuable insights and best practices. It describes the key elements of successful visioning, including:

- Visioning process: Developing compelling and impactful research visions.
- Communications: Planning communications to amplify the vision's reach.
- Evaluation: Guiding and assessing the effectiveness and impact of visioning efforts.

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### About the Computing Community Consortium (CCC)

A programmatic committee of the Computing Research Association (CRA), CCC enables the pursuit of innovative, high-impact computing research that aligns with pressing national and global challenges. Of, by, and for the computing research community, CCC is a responsive, respected, and visionary organization that brings together thought leaders from industry, academia, and government to articulate and advance compelling research visions and communicate them to stakeholders, policymakers, the public, and the broad computing research community.

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# 1. THE RESEARCH VISIONING PROCESS

Visioning can be described as a process of nucleation, crystallization, and broadening. This document focuses on visioning activities that collaboratively develop computing research goals that are 5, 10, 20, or more years into the future. This visioning process provides a guide for carrying out research visioning activities based on the experiences of the Computing Community Consortium (CCC) at CRA. At CCC, visioning starts with the iterative development of a visioning proposal (nucleation) with feedback from the CCC Council, followed by planning and carrying out a visioning activity (crystallization) to inform a visioning report that is circulated to the computing research community, as well as additional activities with agencies, policymakers, etc., as appropriate (broadening). Through visioning activities, CCC works with the computing research community to bring together people from a broad range of disciplines to speak openly about the challenges the field is facing around a topic or area, and what progress could look like in that domain.

**Nucleation**. The first step in the visioning process is the formulation of a potential vision by a small number of people. That person or group identifies a problem (e.g., the prevalence of health disparities in society) or a technology trend that presents challenges we do not know how to meet (e.g., the gap between what quantum computers might be able to do and how we currently build and program them), as well as a community or technology poised to solve it. Once a proposal is submitted, CCC and its network will provide feedback to refine the ideas and plans, for example by broadening or narrowing the scope, suggesting potential participants, recommending visioning modalities, or identifying related work.

**Crystallization.** This is the core of visioning in which a vision is developed through research community participation, clarification of ideas regarding the topic, and formulation of research directions to overcome the associated challenges. While this will typically take the form of a visioning Workshop, there are other modalities for visioning including roundtable discussions or collaboratively writing a white paper.

**Broadening**. The final visioning step focuses on the dissemination of the visioning ideas and recommendations to the computing research community, policymakers, funding agencies, and the general public. To make this happen, the activity will need to produce timely, tangible content—in the form of a visioning report—as well as assist in spreading the key ideas in other forms (e.g., white papers for policymakers, presentations at conferences, participation in a Congressional briefing, creation of a blog post for the CCC, social media posts, etc.).

CCC open call for proposals provides an overview of the process of proposing and organizing a visioning activity. The rest of this document describes guidelines and best practices for developing a successful proposal, organizing high-impact visioning activities, communicating to the research community ecosystem, and evaluating the effectiveness of the activities.

## 1.1. Nucleation: Preparing a Proposal

Nucleation is a gathering of a small number of people to prepare a visioning proposal with a focus on a compelling computing research challenge. This challenge should be clearly defined and serve as the driving force behind the proposed activities. To maximize the impact and effectiveness of the visioning activity, the proposal should prioritize building a broad range of participants. Factors to consider when inviting participants include:

- Disciplinary Background: Consider including researchers from both within and outside of computer science to encourage cross-pollination of ideas and foster interdisciplinary collaboration.
- Demographics: Strive for a balance in terms of career stage, cultural background, geography, and institutional affiliation. This ensures a variety of perspectives and experiences are represented.
- Research Experience: Include individuals from different research backgrounds, such as those from academia, industry, non-profits, and government.

While identifying a challenging research problem is essential, it's equally important to articulate a clear opportunity for progress. The proposal should convincingly demonstrate why this is the right time to address this particular challenge and outline a feasible plan for achieving meaningful advancements.

The goal may be to define a strategic research direction, foster a vibrant research community, and/or develop a roadmap for future research – not to secure funding for individual projects. Examples of goals are:

- Develop a community research roadmap on a specific topic
- Generate recommendations for federal funding agencies
- Identify and foster new collaborations and partnerships

While developing the proposal, consider alternative modalities. The two modalities described in this report are Roundtable Discussions and Workshops.

1. A roundtable discussion is a brief, typically online, guided discussion among a small group of experts (4-8).
2. A workshop is a 1-2 day, typically in person, meeting with a larger group of experts (20-50).

The modalities provide different levels of engagement and flexibility. The selection of one or both of these modalities and the consideration of a series of activities should be included in the proposal and plan for the visioning activity.

A research visioning proposal should include the following:

- **Describe the research challenge**, its current state of development within the computing research field, the goals of the visioning activity, and the connection to

the mission of the CCC. The proposal will be reviewed by members of the CCC Council including computing researchers from a broad spectrum of areas. The proposal should not assume that the reviewers will have a deep understanding of the specific area.

- **Explain the proposed activities**. Describe the desired modality of the visioning activity (workshop and/or roundtable), the desired participants, and how you will engage them. If you are proposing more than one activity, explain the rationale for more than one activity. Describe the products expected from each activity and the mechanisms to coordinate across activities.
- **Connect the activity and the vision**. How does the activity support/foster the vision?
- **Justify why this vision** and this activity are appropriate now. Visioning is not simply a matter of bringing experts together to think on a topic. Why could the computing research community, and society at large, benefit from such an activity now? How does what you are proposing complement other related activities that may be underway?
- **Describe the outcomes** and how the outcomes of the activities can be used to advance the visioning topic area. For example: The workshop will generate a series of white papers about computing research topic XXX that will be shared with YYY. Additional articles based on the findings will be written and submitted to WWW.
- **Identify the organizing committee**. Ensure there is a broad representation of the appropriate communities and different institutions on the organizing committee. Include short biographical sketches of the organizers.
- **Propose potential invitees**. A broad representation of the community will help move the conversation forward and create a new vision. The proposal should provide an indicative list of invitees.

Developing a proposal is an iterative process. Once a proposal is submitted to CCC, the Visioning Proposal Committee will determine if the challenge is within the scope of CCC and provide feedback. This process is completed when the feedback is addressed and a full proposal is accepted for the next step: Crystallization.

## 1.2. Crystallization: Planning for Successful Research Visioning Activities

Planning for successful research visioning involves strategic consideration of the areas of expertise of participants, planning the content and structure of the activity, and a discussion of the expected outcomes, products, and impact. In addition to subject matter experts across a range of disciplines, federal agency involvement is important. Ensuring that federal agencies are aware of the activity facilitates the impact of the results. Sometimes the appropriate engagement is simply for the agency to be aware and observe. Other times, individuals at a specific agency can be active participants, or advisers to ideas being presented. A member of the CCC Council will be identified to

facilitate communication and to ensure that activities are progressing as planned. A CCC Program Associate will be assigned to your activity to assist with scheduling meetings, organizing calls, providing guidance as needed, and will handle the activity's logistics. Below are descriptions of the crystallization process for each modality: Workshop and Roundtable Discussion.

### *Planning for a Successful Workshop*

A successful workshop engages all participants and ensures all workshop attendees understand they have a voice and are important contributors to the workshop. This is particularly important if the Workshop crosses disciplines or brings together researchers new to the area with more seasoned researchers. There are many ways to do this, some more appropriate for different audiences. Below are a few suggestions.

- Encourage the participants to get to know each other by including an informal meal or welcome reception before the sessions start.
- At the beginning of the workshop, introduce the participants using Lightning Slides: one slide per person, completed in advance, accessible to all participants before, during, and after the workshop.
- Start with an opening activity that has people sharing ideas, such as articulating open challenges and putting potential solutions on a timeline.
- Share optional reading material with attendees before the workshop to make them aware of information/concerns in relevant areas and possibly lexicons that may be unfamiliar to some of your participants.
- Convey brainstorming questions to participants before the workshop to prime discussions.

The structure of the workshop can vary, depending on many factors. To achieve visioning,  there need to be opportunities for participation from all attendees, through discussion breakouts, Q&A sessions, etc. It is critical to ensure that the workshop does not only focus on presentations and plenary speakers. There must be significant unstructured time (at least 30-minute breaks, for instance) to encourage side-channel connections and discussions, as well as significant time for discussion during the sessions. A blend of different session formats can be very effective, for example, panels, presentations, unconference sessions, tabletop exercises, and small group discussions with report-outs. In addition to the structure of a single workshop, the visioning activity may be best achieved in a series of workshops.

Planning a workshop should start several months before the workshop dates and the report can take 1-5 months to complete. Effective planning should include the following sequence of decisions and actions:

1. Decide on the dates and location of the workshop: Organizing Committee.
2. Secure a venue for the workshop meetings and accommodation: CCC.
3. Develop invitation list and send invitations: Organizing Committee and CCC.

4. Discuss outcomes and products: Organizing Committee.
5. Develop a communications plan: Organizing Committee and CCC.
6. Identify potential impact goals to guide planning and evaluation: Organizing Committee and CCC.
7. Plan the workshop agenda: Organizing Committee.
8. Create a workshop website: CCC.
9. Start pre-activity communications: CCC.
10. Meet with panelists to ensure common goals: Organizing Committee.
11. Send invitations to participants and collect participant information: CCC.
12. Finalize logistics: Organizing Committee and CCC.
13. Hold the workshop, including evaluation surveys: Organizing Committee and CCC.
14. Write the workshop report: Organizing Committee and CCC.
15. Identify stakeholders and a plan to disseminate workshop products: Organizing Committee and CCC.
16. Start post-activity communications: CCC.
17. Complete impact evaluation report: CCC.

### *Planning for Successful Roundtable Discussions*

The Roundtable discussion is guided by a set of questions, similar to a focus group or semi-structured interview. Questions and topics are prepared in advance; however, as long as computing research visioning remains central to the discussion, the discussions evolve in response to the thoughts and expertise of the participants. A successful Roundtable activity allocates roles to different people: CCC staff, organizers, and participants.

CCC staff provide administrative support throughout the Roundtable activity from the proposal process to post-Roundtable outputs and communications. CCC staff track invitations, schedule the discussions, follow up with roundtable participants, provide guidance on forming roundtable questions, and coordinate writing roundtable outputs. CCC staff keep the discussion on time, ensure the conversation is flowing, facilitate backchannel communications, and add questions to the chat.

The organizers design the questions, decide the order in which questions are introduced, and make modifications to questions after each discussion. One or more organizers are present at the Roundtable to facilitate by asking questions and engaging in conversations. The organizers will analyze the transcripts to help create the reports. The organizers convene to write the outcomes report as a whitepaper or a workshop proposal.

The participants attend one or more Roundtables, respond to the questions, and engage in conversation with the organizers and other participants. It is expected that the participants provide perspectives and relevant information that the organizers do not have.

The following guidelines ensure the roundtable will be effective.

- Allow at least 4-6 weeks lead time for scheduling.
- Discussion questions should be as short and specific as possible.
- The number of people for an inclusive discussion is 3-6 external people, plus a few organizers and staff. If you have a larger group, consider using virtual breakouts and dividing up the organizers and staff for moderation and notetaking in each breakout.
- Consider a broad range of participants (career stage, research background, institution, etc.) for each Roundtable. This is difficult with a small number of people, but it is important to consider.
- Avoid rabbit holes during the discussion:
    - People talking about their own research at length.
    - People talking about their own personal interests or motivations at length.
    - Spending lots of time nitpicking one specific area.
    - Talking about research challenges that are only tangentially related to the main topic.
    - Thinking too small (e.g., talking about one research project that is tackling a single problem of a greater research challenge rather than the research challenge itself).
    - Thinking too big (e.g., what will it look like when robots “run the world” in 100 years in a conversation about advances in computing over the next 10 years).

Below is a list of the tasks and steps for successful roundtable activities.

- Identify areas of expertise relevant to the topic as the basis for inviting participants: Organizers.
- Create a list of potential invitees with their name, institution, expertise, who recommended them, etc. Make groups based on expertise if it makes sense: Organizers.
- Identify as many times as possible that work for one or more organizers. Create a scheduling form with the available times/dates: CCC.
- Draft roundtable questions: Organizers.
- Create email messaging about the topic, potential questions, and potential dates: CCC.
- Send out email invitations and schedule roundtable discussions: CCC.
- Pilot the questions in a discussion with colleagues (e.g., not participants or organizers) and then finalize the roundtable questions: Organizers.

- Prepare a script (identifying which organizer will introduce topics, and who will ask each question, etc.): Organizers.
- Run the Roundtable: Organizers and CCC.
- Survey participants: CCC.
- Take notes during the discussions: CCC.
- Analyze the discussions and write a whitepaper or blog post: Organizers.
- Develop and execute a communications plan: CCC.
- Write impact evaluation report: CCC.

## 1.3. Broadening

The most important product of a visioning activity is a timely visioning report. This report forms the basis for other ways to disseminate results, such as white paper(s), journal article(s), conference presentation(s), and social media posts. This should not be viewed simply as a requirement for holding a visioning activity. The products from the visioning activity have the potential to effect real change in how research is funded and conducted.

While policy is not a direct focus of CCC's work, the information in visioning products has contributed to high-level policy and procedural changes. The impact is highest when the organizers and participants pay careful attention, throughout the planning process as well as during the activity, to the message that they would like to disseminate to the research community, as well as to funding agencies and policymakers. When deciding on session topics and speakers, for example, the Organizing Committee should be mindful of how these sessions will explore topics that will be spotlighted in the products. The goals should be discussed with potential speakers as well, to make sure that their presentations focus on needs in the research community and/or needs from stakeholders and policymakers, with an eye towards how those will be presented in the products.

It is critical to begin work on the overall visioning report soon after the event, while the momentum and interest from your attendees are high and important details are fresh. The CCC staff and Council liaison provide support in writing this report. The report should be written for the intended audience(s); Topic focus, word choice, report structure, and recommendations should be targeted toward specific audiences, including industry stakeholders, funding agencies, policymakers, community leaders, interdisciplinary researchers, and/or the broader computing community. Before being finalized, the report draft will be circulated to the visioning activity attendees for feedback and input, and then reviewed by members of the CCC and researchers who did not attend the visioning activity.

In addition to the required visioning report, there are many other ways to leverage the

results of the visioning activity to effect change, including:

- Whitepaper(s)
- CCC Blog Post(s)
- Social media posts, including LinkedIn posts
- Research articles, recommendations, or opinion pieces in the Computing Research News (CRN), CACM, IEEE Computer, etc.
- Presentation(s) to agencies
- Presentation(s) and panel discussions at related conferences
- DC policy meeting(s)

## 2. COMMUNICATIONS PLAN FOR VISIONING ACTIVITIES

A robust Communications Plan is essential for maximizing the impact of research visioning activities. This impact can be measured in 2 key areas: impact on the participants and broader impact on the community. This Communication Plan outlines a process for connecting with organizers, participants, the research community, and stakeholders to maximize the effectiveness of each visioning activity. This plan features engagement strategies targeted towards both individuals and organizations to expand the reach of the visioning efforts. This plan is developed with a Workshop visioning activity as the default and is adapted for other visioning activities such as roundtable discussions and conference panel sessions.

The Communications Plan is divided into two phases: Phase 1, which focuses on pre-activity communications, and Phase 2, which targets post-activity communications. In Phase 1, the goal is to build excitement and engage the community around an upcoming visioning activity, sparking interest in topics to be explored. Phase 2 shifts to sharing the results—disseminating findings and recommendations to the research community, as well as key stakeholders. These stakeholders include funding agencies, federal offices, and leaders from industry, academia, and national labs.

### 2.1. Phase 1: Pre-activity Communications

In Phase 1, CCC shares the visioning activity communications plan with organizers, fielding questions and comments about the strategy. CCC meets with activity organizers to discuss the types of communications including blogs, website events postings and updates, LinkedIn posts, as well as external and internal partnerships. External partnerships include collaboration with the communications departments at the participants' institutions, while internal partnerships include collaboration with the Computing Research Association (CRA) communication director to amplify posts on social media.

A specific plan is developed for each visioning activity. Organizers assist in developing communications by identifying goals for the communications strategy such as seeking community input or calls for participation, ideas for reaching intended audiences, and areas they would like to contribute to for generating blog posts. CCC interacts with participants through Q&As and short interviews and publicizes these interactions on social media. If the visioning activity is an in-person workshop, CCC will take photos and/or videos of sessions and participants who gave consent. CCC works with organizers immediately after the activity to reflect and plan for the dissemination of key takeaways in the Report.

Website: The CCC website hosts an event page for workshops that includes an overview of the visioning activity, biographies of the organizers, an agenda, participants, and the workshop report, once it has been published. Throughout the planning process, the organizers will work with CCC Staff to develop the information for the event website.

CCC Blog: CCC has a blog that can be used to disseminate visioning communications. Blog posts can be used to elevate the voices of organizers to illustrate the importance of the research topics through an open call for participation, Q&As, interviews, and stories. The Communications Associate works with organizers early in the planning process to publish an announcement blog describing the visioning activity and its importance to the community. Additional blogs may include a Q&A that targets specific questions participants may have, interviews with the organizers and/or participants, and stories that connect with the visioning activity.

LinkedIn: CCC has a LinkedIn home page that reaches the broader research community with stories and announcements to form a broader community around computing research. LinkedIn posts boost the visibility of our blogs, allowing organizers to engage a broader audience. Posts on LinkedIn include sharing our announcement and Q&A blogs, quotes from organizers about their research and passion for the topic, and quotes from participants about what they are looking forward to at the event.

External Communications: CCC works with organizers to contact participants who may be interested in developing communications content. CCC also informs Council members of upcoming activities.

## 2.2. Phase 2: Post-Activity Communications

The primary vehicle for disseminating findings and recommendations of a visioning activity is through the report. Once this report is ready for release, CCC will promote the visioning report. The organizers, CCC, and CRA's Government Affairs Committee meet to discuss the distribution of the report to relevant stakeholders and the workshop attendees. The discussion includes identifying relevant stakeholders, content for a one-page description, talking points, and briefing slides. The Government Affairs Committee supports the dissemination by finding audiences for where the report is relevant among policymakers and other agencies. Organizers provide information about specific people in funding agencies that CCC should contact to provide information

about the recommendations and findings. CCC will share the report with the NSF Program Directors who administer the CCC's Cooperative Agreement.

- **Website**: Once the Report is published, it will be linked to the relevant pages for events and reports on the website.
- **CCC Blog**: CCC collaborates with organizers to produce a blog on initial key findings. Once the Workshop Report is finished, CCC will produce a summary blog of the report.
- **LinkedIn**: CCC posts after the Workshop include announcing key findings, photos of participants and organizers at the event, and video interviews and quotes from participants about what they learned.
- **Internal Communications**: CCC works with CRA Communications Director to promote the report release through resources such as Computing Research News (CRN) and the CRA Download.
- **External Communications**: CCC staff contact all participants and organizers to request contact information for their affiliations' communication departments. CCC provides specific language for organizers and participants as needed when sharing on LinkedIn. CCC seeks participation from Council members to amplify posts on LinkedIn.

# 3. EVALUATION FOR VISIONING ACTIVITIES

## 3.1. Evaluation Logic Model

Aligning the visioning activity with the core goals of CCC ensures a broader impact. CCC is committed to continuous improvement and demonstrating the impact of its work. To achieve this, CCC employs a comprehensive evaluation process guided by a logic model. This model, detailed in Table 1, functions as a "theory of change." It outlines how the CCC's resources – its people, activities, and funding – generate specific outcomes that ultimately contribute to advancements in the broader computing research field.

This commitment to evaluation influences the visioning activities that the CCC supports. These activities are expected to align with the organization's overarching goals, ensuring that resources are strategically allocated to maximize impact. The CCC actively collaborates with proposers and organizers to ensure their visioning efforts contribute to these shared objectives.

The logic model provides a framework for understanding this process, and it comprises five key components:

- **People and Organizations**: The individuals and institutions involved in CCC activities.

- **Activities and Outputs**: The specific actions undertaken and the tangible results they produce (e.g., reports, workshops, Task Forces).
- **Short-Term Outcomes**: The immediate effects of these activities, such as increased awareness, new collaborations, or the generation of research agendas.
- **Long-Term Outcomes**: The broader and more enduring changes that result from CCC's efforts, such as influencing funding priorities or shaping research directions.
- **Impact**: The ultimate, long-term contributions to the computing research field, such as breakthroughs in specific research areas or the development of transformative technologies.

By utilizing this logic model, the CCC aims to ensure its visioning activities are effective, impactful, and contribute to the advancement of computing research.

**Table 1: Computing Community Consortium Logic Model**

| PEOPLE AND ORGANIZATIONS | |
|---|---|
| **CCC leadership and staff:**<br>CCC Council Chair and Vice Chair<br>CCC Council Executive Committee<br>CRA Director<br>CRA CCC Director, Program Associates and Communications Associate<br><br>**CCC Council:**<br>23-24 members with 3-year terms<br>Nominated via open call to computing community<br>Diverse in research interests, geography, institution type, and backgrounds, including representation from historically underrepresented groups<br><br>**CCC Task Forces:**<br>Smaller groups focusing on thematic areas<br>3-5 Council members each, plus occasional external members<br>Council can also have working groups | **CCC Alumni:**<br>Network that is available for ad hoc needs and expertise<br><br>**CRA members & computing research community engaging with CCC:**<br>Participate in, use products of, and advance the progress of visioning efforts<br>Have diverse backgrounds<br>Include researchers with varied levels of prior experience with/participation in CRA efforts<br><br>**Additional collaborations with:**<br>CRA committees<br>Federal agencies<br>Past CCC leaders<br>CRA's sister societies<br>Other disciplinary societies<br>Private foundations |

| ACTIVITIES AND OUTPUTS | | |
|---|---|---|
| **CCC-sponsored or CCC-supported events:**<br>Workshops<br>Roundtables<br>Symposiums | **CCC Products:**<br>Workshop reports<br>White papers<br>Best Practices documents<br>Quad papers (every 4 years) | **CCC Communication:**<br>CCC website<br>Social media<br>Blog posts<br>YouTube channel |

| | | |
|---|---|---|
| AAAS panels<br>Blue Sky<br>Conferences awards<br>Leadership training events<br>Council meetings<br>Congressional briefings<br>Agency visits | Responses to RFIs<br>Slide decks for briefings | Communications for partner organizations, journalists, and general public<br>CRA publications<br>Press releases |

**SHORT TERM OUTCOMES (within 1-3 years)**

**Individuals attending CCC-sponsored events, creating CCC products, and engaging with CCC communications:**

- Have increased awareness and knowledge of future needs, issues, and challenges related to event/product/communication topic(s)
- Feel there is greater clarity about how to move forward on research vision topics
- Share the results of CCC's work with colleagues
- Develop new research projects based on visioning topics/discussions
- Use and cite CCC products in their research, grant proposals, presentations, articles
- Seek out leadership roles to advance research visions inspired by the visioning exercises
- Develop stronger (in number and quality) and more diverse professional peer connections (event attendees only)
- Develop new collaborations with colleagues around visioning areas
- Develop more communications/ connections outside the computing community

**LONG TERM OUTCOMES (4 – 6 years)**

- Early-career CCC event attendees and award recipients:
  - Have accelerated professional growth
  - Assume leadership positions
- Individuals in the broader computing research field have increased collaboration on priorities, focus areas, and roadmaps for CCC-identified future research vision areas
- The number of collaborations and organizations within CISE working in CCC-identified research vision areas increases
- Funding opportunities providing support for CCC-identified research vision areas increase in number and in amount of financial support offered
- New policies that are related to CCC-identified research vision areas cite CCC's work
- The public's awareness and understanding of the CCC-identified research vision areas increase

**IMPACT**

- advances ethical, inclusive, and socially responsible research
- engages in innovative and high-impact research
- addresses pressing national and global challenges
- develops leaders that promote conversations across disciplines/domain

## 3.2. Evaluation Process for Visioning Activity Organizers

CCC is dedicated to supporting successful visioning activities. To that end, an external evaluator is available to collaborate with organizers throughout the entire process, from initial conception to final reporting. This collaborative evaluation process unfolds in three key stages: proposal development, activity planning, and activity surveys and report

### *Proposal Development*

Aligning with CCC Goals. During the initial proposal stage, organizers are encouraged to consider how their visioning activity aligns with the broader evaluation objectives of the CCC. These objectives, as outlined in the logic model, provide a roadmap for achieving impactful outcomes within the computing research community. At this stage, the focus is primarily on the short-term outcomes of the visioning activity, particularly those that directly impact participants. Organizers should review the CCC's logic model and identify the specific short-term outcomes that are most relevant to their proposed activity. This ensures alignment from the outset and sets the stage for a successful visioning process.

### *Activity Planning*

Crystallizing the Vision: The planning stage marks the transition from initial concept to concrete action. Here, organizers and CCC staff collaborate to crystallize the vision, focusing on translating ideas into a well-defined research agenda. To aid in this process, Table 2 describes a framework for potential visioning outcomes. This framework divides the crystallization process into three core components:

- Knowledge Sharing: Facilitating the exchange of information and expertise among participants.
- Developing a Shared Vision: Forging a common understanding of the research challenges and opportunities.
- Action Planning: Creating concrete plans for future research collaborations and initiatives.

Throughout this process, building professional connections remains an important underlying goal, fostering a strong and collaborative research community. The consideration of evaluation starts in the planning stage when organizers discuss the framework and identify the specific outcomes they aim to achieve. These identified outcomes then serve as "guideposts" for shaping the visioning activity, ensuring that the agenda, participant selection, and planned activities are all strategically aligned. Evaluation measures are developed based on the prioritized outcomes.

*Activity Surveys and Evaluation Report*

Gathering Data and Feedback. CCC collects data during the visioning activity through surveys. If the activity is an in-person workshop, CCC administers a short (1-minute) survey at the beginning of the workshop and a slightly longer survey (7-10 minutes) at the end of the workshop. If the activity is a roundtable discussion, CCC administers a short survey (2-3 minutes) at the end of the roundtable.

The evaluation process culminates in a comprehensive report that documents the outcomes of the visioning activity. This report provides valuable insights into the effectiveness of the activity, its impact on participants, and its contribution to CCC's overarching goals. This information is then used to inform future visioning efforts and contribute to the ongoing improvement of the CCC's visioning process.

**Table 2: Framework for Potential Outcomes for CCC Visioning Activities**

| **Share knowledge →** | **Develop a shared vision →** | **Plan actions** |
|---|---|---|
| Attendees share their knowledge and perspectives about the visioning topic, such as:<br>• Relevant research from a variety of disciplines<br>• Current problems, challenges, and/or issues<br>• Root causes of current problems, challenges, and/or issues<br>• Anticipated future problems, challenges, and/or issues<br>• Promising practices/solutions to address current problems, challenges, and/or issues<br>• Proposed solutions to future problems/ challenges, and/or issues<br>• Current structural factors that relate to the topic (funding mechanisms/ agencies; policy; opportunities for collaboration across disciplines, research settings, and geographies, other) | Attendees synthesize what they have learned and converge on the important themes and needs, such as:<br>• High priority issues/challenges that need to be addressed<br>• Most promising practices/solutions that address the needs<br>• Gaps in research<br>• Who should be working and collaborating on these issues<br>• How changes in funding could enhance progress<br>• What structural changes could enhance progress<br>• How to attract new/different people to this work | Attendees commit to actions that will effect change, such as:<br>• Write a report to summarize the visioning Workshop<br>• Write an article on the visioning topic for the computing research community<br>• Write an article on the visioning topic for the general public<br>• Present at a conference about the visioning topic<br>• Inform research agencies about new opportunities for research based on visioning<br>• Discuss visioning with colleagues who did not attend the Workshop<br>• Collaborate on new research with other Workshop attendees<br>• Take action to educate people who are not in computing research<br>• Public awareness campaign to promote recommended actions |