AN EVALUATION PERSPECTIVE ON CAISE
INVERNESS RESEARCH
NOVEMBER 2011

THIS REPORT

The Center for the Advancement of Informal Science Education (CAISE) is mid-way through year five of a five-year cooperative agreement with the National Science Foundation. The NSF funded CAISE in 2007 in order to serve as a resource center to the informal science education (ISE) program, its grantees, and the larger ISE field. Inverness Research has served as the external evaluator for the past five years, documenting the development of CAISE, and the quality and value of its work to key audiences and stakeholders.

This report is meant to provide an evaluator's perspective on the work and progress of CAISE. It is deliberately not a final summative five-year evaluation of CAISE; it does not include our final collection of data which is ongoing. In year three of CAISE, we did an extensive evaluation, including surveys of PIs, program officers, inquiry group members, steering committee members, and fellows. We also surveyed the broader ISE field. All of this data was synthesized to portray CAISE at that point in time. That evaluation feedback was one piece of a process that led to significant changes in CAISE and many new initiatives. CAISE has been developing and implementing these new initiatives in years four and five; this work is underway but will not be ready for summative evaluation until after the 2012 PI Summit in March. With these initiatives still in development, and CAISE in the process of re-invention, it would be premature to conduct the same kind of extensive evaluation (surveys and interviews) as we did at the end of year three.

Rather, this report is meant to be more of a thought piece, a reflection on the progress of CAISE, that draws upon our extensive interaction with and monitoring of CAISE as it has evolved over the past year-and-a-half. We do include evaluation data where we have it, and describe our plans for further data gathering. Our main intent is to help the review panel understand and think insightfully about CAISE, its emerging role and work strands, and the evolving theory of action that underlies the investment in CAISE.

Hence, in this report we:

- Describe how CAISE has changed and continues to evolve
- Describe the major work strands of CAISE
- Provide our own assessment of the progress and potential of these work strands
- Provide an overview and assessment of CAISE as an organization
- Propose reflections on the ways that CAISE can continue to evolve and add value to NSF, the PIs and the broader ISE field

THE HISTORY AND EVOLUTION OF CAISE

CAISE was conceptualized as a resource center for the ISE field. In reviewing the history and evolution of CAISE it is important to first note some important contextual factors that have influenced the evolution of CAISE.

CAISE as a DRL Resource Network

CAISE is one of several resource networks that are designed to support and add value to specific NSF programs within the Division of Research and Learning in Formal and Informal Settings (DRL). Investing in DRL resource networks is quite different from investing in a project, as the resource networks are not projects unto themselves, but rather are meant to add value to existing NSF projects enhancing their reach and effectiveness. The rationale behind the DRL resource networks, we believe, centers around a few underlying premises about ways to leverage NSF's current funding of programs and projects:

1) There is untapped synergy in every DRL program. Hundreds of grantees bring expertise, experience and knowledge to their individual projects; each project also is doing innovative and creative work. Shouldn't there be mechanisms and resources to better connect the projects and to enhance communication and the sharing of knowledge?
2) There is untapped knowledge in every DRL program. Every project is generating both formal and informal knowledge; there are too few mechanisms for identifying, sharing and disseminating that knowledge. Shouldn't NSF seek to optimize the degree to which its investments generate and share knowledge?
3) NSF does not have the personnel, time, resources or license to perform all the functions it would like to, both in terms of supporting and learning from its grantees. Shouldn't NSF find structures and mechanisms to do some of this work and thereby to optimize the quality and output of its investments?

Thus, there are multiple factors that shape the vision, form, strategies and work of each DRL resource network. (And, we note as a result that the DRL resource networks are all quite different in purpose, work and form.) Some of the most salient factors include:

1) the overarching NSF program vision of the intended role and function of a DRL resource network
2) the vision, skills, interests and capacity of the organization and individuals leading each DRL resource network
3) the vision of the cognizant program officer
4) the nature, extent and quality of the interactions with the other program officers who are part of the associated program cluster

5) the nature and scale of the projects and PIs within the program
6) the nature and scale of the field(s) represented in the program.

All of these factors have been important in shaping CAISE. It is important again to reiterate that the DRL resource networks are a work in progress, and their purpose and value is becoming clearer and better articulated through their collective experience.

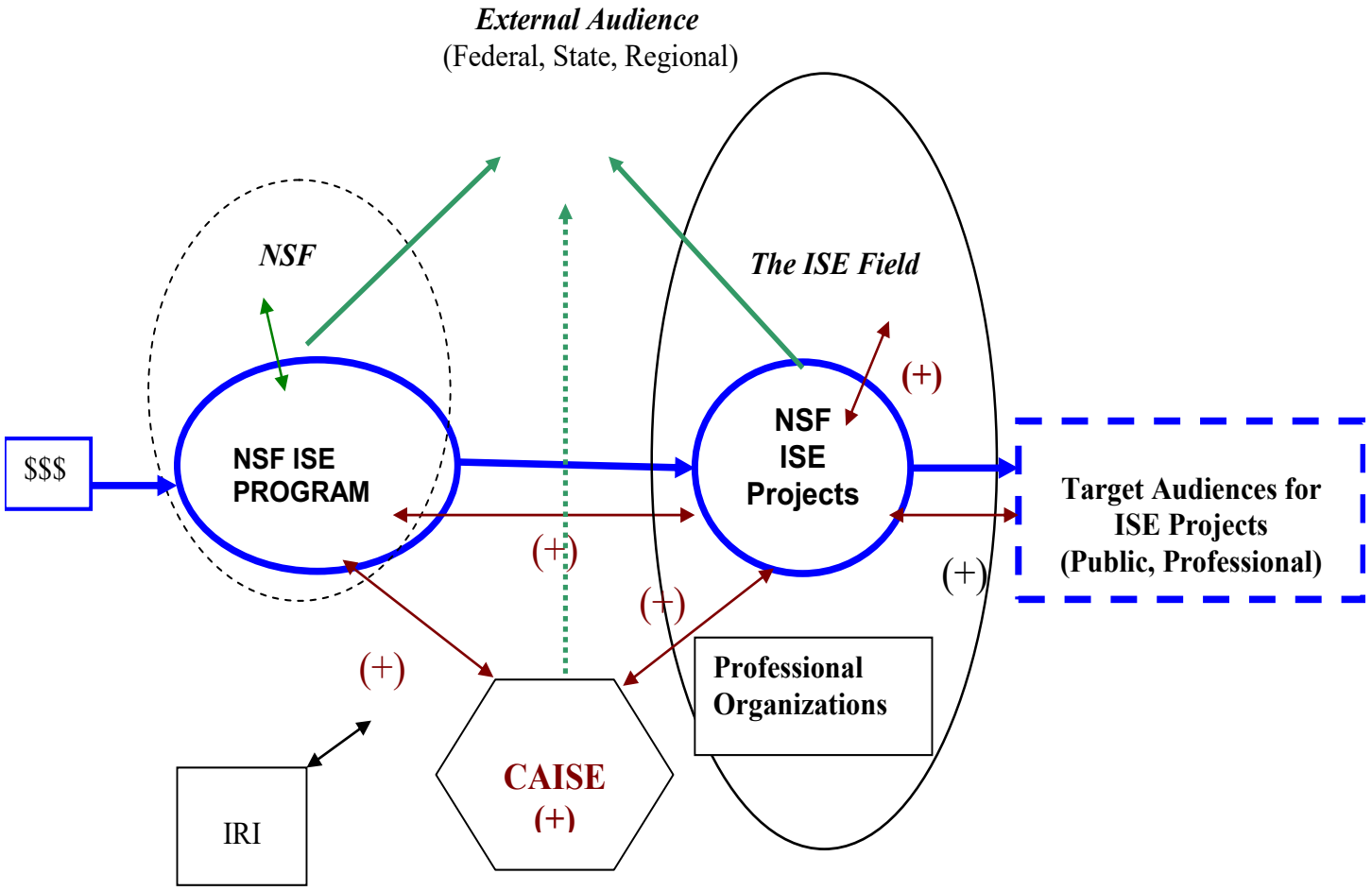
The Larger Context of the ISE Field

Another important factor in determining the role and shaping the form of CAISE is the scope, scale and diversity of the ISE field. Not only is the ISE field very large, it is also comprised of many different sectors and types of ISE work. Those working in the ISE field vary in the degree to which they are centrally or peripherally involved in ISE work, and in the extent to which they view themselves as informal science educators first and foremost. The NSF ISE portfolio of projects is one small piece of a much larger ISE field.

CAISE's Evolving Theory of Action

CAISE set out from the beginning with the primary goal of strengthening the ISE field by helping to create a shared informal science education identity, and by enhancing the connections and collaborations not only between NSF-funded ISE PIs but also with the broader world of people engaged in providing informal science education experiences. Thus, CAISE in its first three years ambitiously pursued a "field-building mission." CAISE truly did see itself as a "center for the advancement of informal science education" – a conception considerably more ambitious than serving as a "resource center" for funded projects. CAISE's theory of action in its first few years was to create an overarching ISE community context that would generate a process of empowering the leaders of the ISE field to convene, inquire, converse, reflect, distill, produce, share and disseminate professional knowledge. Through CAISE-generated processes, it was intended that a stronger ISE field would emerge and in symbiotic fashion, CAISE, a center of that field, would also grow in its stature, size and capacity to nourish the field.

CAISE DESIGN SPACE



Note – Blue lines represent stream of investment; red arrows represent interactions and contributions; Green arrows represent communication and advocacy

The diagram above which Inverness presented in the first year review of CAISE shows the multiple ways in which CAISE could serve its primary intended clients – the NSF ISE program, the funded NSF projects, and the broader ISE field. Importantly, CAISE is intentionally positioned as a facilitator of interaction between the NSF ISE program and the funded projects (as well as the broader field). In the early years of CAISE this "design space" was explored by many different strategies and activities of CAISE which allowed the organization, and NSF, to evolve a sense of where CAISE could be most efficacious in its work. CAISE's activities the first few years included creating a website, sending out newsletters, hosting online forums, hosting a PI meeting in year one and an ISE summit that included representatives from the broader ISE field in year three, forming inquiry groups that examined

critical issues to the ISE field and produced white papers and reports, analyzing the ISE portfolio, and a fellows program to address the need for increasing equity, diversity and access in the ISE field. The work was guided by a steering committee, by feedback from the ongoing evaluation work, by feedback from the yearly reverse site visit panels, and by input from program officers at NSF.

The end of year three was a key point in time for CAISE -- two of the original co-PIs were stepping back (one retired from ASTC and discontinued involvement in CAISE; the other continues to serve CAISE as a senior advisor). In addition, based on feedback from evaluation efforts, from PIs and members of the ISE field gathered at the ISE summit in 2010 and at ASTC sessions, from the 2010 reverse site visit panel and ISE program officers, and from the VSA Oversight Committee and Board, the project shifted its focus from field-building writ-large, to an effort that returns CAISE to a role that more closely resembles that of a resource center. In the past two years CAISE focused more on the immediate needs of the ISE PIs and the NSF program officers. We believe that the narrowing of focus for the work of CAISE may ultimately help CAISE, in fact, become better at strengthening the broader ISE field.

THE YEAR FOUR AND FIVE WORK OF CAISE

CAISE developed a new set of initiatives for its years four and five work. The overall goals for the initiatives were to strengthen researcher-practitioner links; enhance and improve the infrastructure for websites; strengthen inclusivity on the part of different ISE sectors; and expand technical assistance and resources for ISE professionals. Each initiative is overseen by one of the co-PIs, and includes a development team of members of the field, a CAISE senior advisor, and one or two ISE program officers. The initiatives in years four and five include the following:

Evaluation Initiative -- These activities, overseen by VSA, have focused on adding value to existing evaluation-related resources, or creating new resources, that help members of the ISE field do more rigorous evaluation and, thus, better assess and share the contributions of their work. Working closely with NSF, VSA surveyed the NSF ISE PIs to review *The Framework for Evaluating Informal Science Education,* seeking to gain information that would inform updating that document. In addition, the VSA commissioned the PI's Guide to Managing Evaluation, designed to help PIs better understand how to work with professional evaluators in service of their projects. VSA also collected content for a wiki that would collect and help synthesize a wide array of evidence about the contributions and significance of informal learning experiences.

Web-based Infrastructure Initiatives -- This set of activities, largely overseen by UPCLOSE, Ideum, and the Lawrence Hall of Science, has focused on improving the web-based infrastructure that supports the ISE field. The work of CAISE is to create interactive tools and resources that make it possible for both insiders and outsiders to better understand the ISE field. To accomplish this CAISE convened a group of people in the ISE field who are currently working on web-based infrastructure

projects. This group, who named themselves the Infrastructure Coordination Roundtable, created shared standards and goals for leveraging the individual investment NSF made in their projects in order to strengthen the overall web-based infrastructure for the field. UPCLOSE in Pittsburgh, Ideum, and the Lawrence Hall of Science developed the "Informal Commons," a federated search site that allows people to search data from several core infrastructure sites in informal science education, including exhibitfiles.org; informalscience.org; and howtosmile.org, among others. In addition, UPCLOSE and Lawrence Hall of Science took a large paper/post-it note field-built history of the informal science education field developed at the 2010 ISE Summit and developed a computerized, searchable, interactive version of that that also includes access to several key databases in the field.

Entrée Initiative -- The Entrée activities, overseen by Oregon State University (OSU), have focused on creating resources and tools that enable better understanding of and access to the ISE field by key audiences: new and potential PIs, and members of the scientific research community. OSU created a presentation and poster session to introduce ISE to key audiences, including members of the research science community. OSU also developed a set of materials for the CAISE website designed to help audiences new to ISE -- those new to ISE, new PIs, potential PIs, and science researchers -- learn more about ISE and access key resources and documents in the field. Also, OSU telephoned all active PIs in the ISE portfolio in order to provide them with an overview of the work of CAISE.

Media Initiative -- This initiative, overseen by UPCLOSE, grew out of evaluation feedback from the PI and ISE Summits, and was designed to connect the disparate group of professionals that work in ISE media. UPCLOSE convened informal science practitioners and evaluators. This group currently has few mechanisms to connect in other organized, professional settings, and they strategized ways they can strengthen their work and the profile of their work.

Additional Small Convenings/PI Meeting -- CAISE received supplemental funds to host a series of small convenings leading up to and informing the 2012 PI Summit. These small convenings intend to gather PIs and evaluators from the ISE portfolio to share strategies and lessons learned around key topics and themes. For example, a convening in November 2011 will focus on projects that use organizational networks as a key strategy in their work. Other meetings will focus on professional development in the field, and efforts to educate the public around issues of climate change and sustainability.

Evaluation Findings About the Current Initiatives

In addition to documenting and monitoring the overall work of CAISE, Inverness Research has focused its evaluation efforts this year on gathering data on this set of initiatives. We have used several strategies to do this. We implemented a "first

responder" strategy to gather formative feedback on initiatives as they progressed. With this strategy, we contacted PIs from the list of active PIs and asked them to review draft (or alpha/beta) versions of products and resources as they became ready for review. PIs were contacted, asked to participate, asked to thoroughly review the product or resource, and then participate in an in-depth telephone interview with us. To date, we have used this strategy with the alpha version of the informal commons, and have plans to implement it with the chapters of the PI's Guidebook, the Evidence Wiki, and the Entrée web pages when they are ready for review (we anticipate having some of this data prior to the reverse site visit in early January).

A second strategy for gathering information about the response of the field to the CAISE initiatives was to conduct mediated interviews in the CAISE booth at the ASTC annual meeting around the beta version of the informal commons, and with the ISE Timeline. We observed visitors to the booth interacting with these products, and interacting with product developers, and gathered feedback and questions from these conversations.

A third strategy has been to attend events and activities and conduct follow-up interviews with participants. We have utilized this strategy with the media convening and with the Entrée presentations. With the formative feedback on the Informal Commons and the Media Convening, our informant groups included NSF ISE Program Officers in addition to ISE PIs.

For all of the evaluation work to date, we've prepared informal memos and/or notes with feedback. In this section, we'll briefly summarize our findings on the initiatives we have been able to study to date: the media convening, the Informal Commons, the ISE Timeline, and the Entrée presentations.

In all cases, the initiatives have been developed carefully and thoughtfully, with input from senior advisors and program officers, and multiple iterations of scripts and processes. This thoroughness has come at a cost -- most of the initiatives have rolled out more slowly than what was originally anticipated when they were crafted at the beginning of year four. It is important to note that the initiatives we have evaluated, for the most part, have been viewed as high quality efforts.

Media Convening

The media convening was viewed as a highly positive event by both the PIs and the NSF program officers who participated. The event fostered productive, meaningful and important conversations among ISE media practitioners, and led to concrete action steps that are currently being worked on by sub-committees of attendees. As one participant noted:

> *A number of the things that actually took place over the two days were very much in keeping with what I had hoped would take place. It is rare that one*

has the opportunity to get together with folks who work in the field of ISE media. The conversations and themes that came up -- and that we tried to dig into -- were quite constructive and positive.

CAISE's planning, organization and facilitation of the event was rated highly by those we interviewed. Following the meeting, many expressed a new or renewed interest in continued gatherings of ISE media professionals. There is an anticipation of what is next and what CAISE will do to continue the momentum that began at this meeting. A small group of media convening participants requested funding from NSF to convene a larger group of ISE media professionals the day prior to the 1012 PI meeting that CAISE is hosting in March.

This convening was very proactive -- it really did result in a blueprint that will allow us to work toward a goal for the next 6-8 months...

According to participants we interviewed the keynote address was seen one of the few weak points in the meeting -- they did not feel the speaker was as inspiring or useful as they had hoped. Participants also felt that key representatives of the field were absent from the meeting (mostly due to scheduling conflicts) that would have ensured a more representative group of the broader field of ISE media.

In general, both those that were unfamiliar with CAISE going into this convening and those that were familiar came away from the meeting with a positive attitude about CAISE, as these quotes illustrate:

I think CAISE performs a terrific and important service to the whole field.

The convening helped me to understand CAISE better and to gain a greater understanding of what they are trying to accomplish and how they are trying to listen to the field.

We note here that the media conference represents an important new strategy for CAISE. To date CAISE has mostly pursued cross-sector initiatives, seeking to build connections and share knowledge across the boundaries that often separate museums, youth programs, media projects, and research efforts. This convening instead pursued a strategy of developing connections and sharing knowledge within a given sector. This strategy was seen as important and logical by one NSF program officer who said:

I see the sectors of informal science education like the spokes of a wheel. For a wheel to be strong each spoke has to have its own integrity and strength. Then, where it is possible and appropriate, you can make connections across sectors… This is like the rim of the field. Physics, or other science fields, are very much like this with the spokes of the field being the sub-fields of physics. CAISE should not only seek to build the rim of the wheel, but it should also focus on strengthening each spoke…

Informal Commons

We conducted a round of "first responder" interviews with PIs and program officers about the alpha version of the Informal Commons web site. In addition, we briefly observed usage of the beta site in the CAISE booth at ASTC.

In general, most of the first responder interviewees were pleased with the site and, based on their review, viewed the development of the site as a positive step for the ISE field. As one informant said,

> *My first impression is that it is nice and clean, and it presents a meta-search engine across a handful of other sources. I think it does that well. I got results I expected. Overall, I liked the appearance of it.*

They see it as something that has potential to serve the field and help unify the field as well. As one informant noted,

> *I think this could help create a common identity. This could add definition to who we are.*

In their reviews the first responders used the site to search for information related to their own projects or the work of their own sector (e.g., media or film); some searched for articles they thought should be there -- as a test of how "complete" the search results were. Some searched by strategy (i.e., connecting with scientists, afterschool programs, etc.) and still others searched by topic or area of content (e.g., mathematics, astronomy). They envisioned scenarios where they were seeking relevant prior work and articles for proposal writing, or information from which to build a new project. In general, they were pleased with what they found. They liked having a site that narrows searches, focusing on key resources for the ISE field. As informants said:

> *I think this is a breath of fresh air. I love seeing something that is so clear of purpose.*

> *I like that it really simplifies the searches and got rid of the background noise.*

The NSF program officers we interviewed noted that it would be a useful tool in their work with the field as well:

> *This is going to be so helpful to us as program officers. Internally, we can see what our investments are and where some gaps may be as well.*

> *When someone calls and asks us about something, we can use it to do a quick search and point potential PIs in that direction.*

In their searchers people generally found the resources they expected to see there, as well as new resources, and they thought the website would be accessible to a wide range of people. Almost all of the informants generally agreed that this would be a more useful resource for people who knew at least a bit about the ISE field than those who were brand new to it. Most people saw this as strictly a search engine, and most people wanted it to be only a search engine. This was particularly true of the informants who were more immersed in and familiar with the broader ISE field. Those newer to the field or who saw themselves more on the periphery of the field tended to want more community building aspects as well -- a place to not only search for what's out there, but readily connect with who is out there as well.

The first responders as well as the program officers offered specific recommendations about how to improve the communication of the overall goal and purpose of the site, to improve the usability of the site, and to improve understanding of the search results. Many of these recommendations were taken into account in the beta version.

The beta version presented in the CAISE booth at ASTC was well-received. The search function is highlighted more prominently than it was in the alpha version, additional sites (howtosmile.org; research2practice.org) were also connected in, and additional cataloguing of data had taken place such that searches were yielding more complete results. There is additional work to be done cataloguing and tagging the data on the individual sites, and in improving the background information on the home page about the individual sites and how the search works -- issues the Informal Commons team is continuing to address.

The Infrastructure Coordination Roundtable

An important part of the development of both the Informal Commons and the ISE Timeline is the work of the Infrastructure Coordination Roundtable group. This group, who convened in Washington DC, Corrales, New Mexico, and most recently at the ASTC convention in Baltimore, set the metadata standards, as well as cooperative short- and long-term goals for the coordination of the overall web infrastructure work; the group has played an active role in seeking to leverage the individual investments NSF has made in web-based infrastructure sites for the ISE field.

We would note here that this group is a good example of the role of CAISE and illustrates the potential of CAISE to leverage NSF's investments. In this instance CAISE was uniquely suited to bring this group of people together, and to support them in ongoing ways to improve the web-based infrastructure for the ISE field. (We note that CAISE played a similar role in assisting NSF as it convened a group of PIs and evaluators working on collecting and analyzing data from the ISE field, including representatives from Westat who oversee the Online Project Management System (OPMS); SRI who is currently conducting an evaluation of the Informal Science Education program at NSF; and Building Informal Science Education (BISE),

who is analyzing evaluations posted on informalscience.org, and Developing, Validating, and Implementing Standardized Evaluation Instruments (DEVISE), who are creating an online database of evaluation tools and instruments for citizen science projects.) Both of these examples represent CAISE being opportunistic in finding ways to connect existing NSF projects which otherwise might be pursuing similar goals with little knowledge of each other's work, and even less chance to work collaboratively.

ISE Timeline

The ISE Timeline began as a field-created history of the ISE field. A large paper timeline was displayed at the 2010 ISE Summit, with post-it notes provided for attendees at that meeting to add significant events, ideas, resources, and people important to the history of the ISE field. That activity was very well-received, and CAISE moved forward with creating a digital version of the paper timeline, one that users could interact with to understand not only the broad scope of the field, but also zoom in on the details. In addition to the field-generated data gathered at the 2012 ISE Summit, the interactive timeline currently also draws from the NSF database. Thus, a user can look at significant events and NSF ISE-funded work for a particular year, or they can sort it by audience, science content, type of project, etc. The categories for filtering the data on the ISE Timeline are the same as the ones for the Informal Commons.

We observed people interacting with the ISE Timeline in the CAISE booth at the ASTC annual meeting. The Timeline and Informal Commons were mounted side-by-side, and served as complementary resources. The ISE Timeline provides a broader view of the history of the ISE field, while the Informal Commons allows for a much more in-depth way for users to seek specific information about resources, projects, articles, and activities in the ISE field.

The ISE Timeline was well-received by those who used it. Most of the suggestions for improvement focused on additional filters for conducting searches through the timeline (e.g., citizen science); additional key events, projects, and people that needed to be added; and additional data sources that might be useful to draw from (i.e., informal science education efforts funded by other funders). There were some additional suggestions related to additional design features and potential uses. Several people also thought it important to be able to access information about how to connect with people and projects represented in the timeline, either through links to project websites or some other means.

Several people noted the complications that arise from having a tool that represents both data from community input and data from databases.

People see the ISE Timeline and the Informal Commons as two very useful tools that will help members of the ISE field draw on and build from the work that has been done in the past. As one person said,

These are very good. I see these as good, useful tools.

We see both of these tools as furthering many of the broader goals of CAISE including the strengthening of the identity of the ISE field and enhancing the connectedness between different organizations and sectors involved in ISE. CAISE in this way represents some early steps in the development of the capacity of the ISE field to represent itself and to better connect its diverse membership.

Entrée Presentations and PI Calls

In August and October of 2011, CAISE made presentations at the Astronomical Society of the Pacific (ASP) and the Geological Society of America (GSA) conferences about the ISE field and CAISE.

Inverness contacted 10 individuals who attended the conferences for their review and feedback about the presentations. Of these 10, three agreed to be interviewed, and one person sent an email containing brief comments about the presentation. Two people responded that they did not recall attending the presentation.

Overall, interviewees said they attended the CAISE Entrée presentation out of general interest and curiosity. They felt that in general, the presentation and discussions at the sessions were informative. At the GSA conference, only three people were present at the CAISE session. Those at the GSA session suggested that the low attendance could be attributed to both the timing of the session, as well as the vague description in the conference schedule about the session.

One interviewee who attended the GSA session also suggested that presentations made at a conference for scientists need to be tailored more strongly to that kind of audience; she felt that the presentation was "preaching to the choir" and that scientists in the room (there was one at this presentation) would need more convincing of the value of ISE as a mechanism for doing outreach and as a good venue for sharing their research with the public and other audiences. She said,

> *CAISE should include pieces of the NRC report in the presentation for the scientist as a way of providing "hard evidence" of the value of ISE… Scientists need to think of this as being part of their work … informing those who give them funding, as well as the policy makers who get voted into their positions. Scientists need to be convinced that influencing the public is good in its own right, and it also serves their own interests in the long run. That's one of the arguments that could go in there as to why we are promoting ISE, and why we want the scientists involved and how to convince them.*

Finally, one person who attended the ASP presentation as well as the ASTC CAISE presentation was left confused about the role of the Entrée program in CAISE, and how the other strands of work within CAISE related to one another.

The Entrée web material is ready for review at the time of this report writing; we anticipate having PI first responder feedback on the Entrée web material to present at the Reverse Site Visit in January.

As part of the Entrée initiative, in the spring of 2011, CAISE reached out to 170 active ISE PIs, telephoning them to ask them about their knowledge and awareness of CAISE, what they would like to see CAISE do, if and how they use interns in their projects, and to collect their ideas about how best to attract new people to the ISE field. CAISE completed calls with 50 of those PIs. The participating PIs enjoyed the direct communication with CAISE; however, data from the calls showed that PIs were not very aware of CAISE's current efforts.

Based on the evaluation effort to date, we think CAISE may need to revisit its strategies for representing itself and more broadly promoting the value of the ISE field. These are non-trivial tasks, and they may require different strategies. There is no doubt that the mission of Entrée is important: promoting the role and value of ISE, and helping people understand the work of CAISE, are both worthy goals. But there are several issues that have worked against the effort to date:

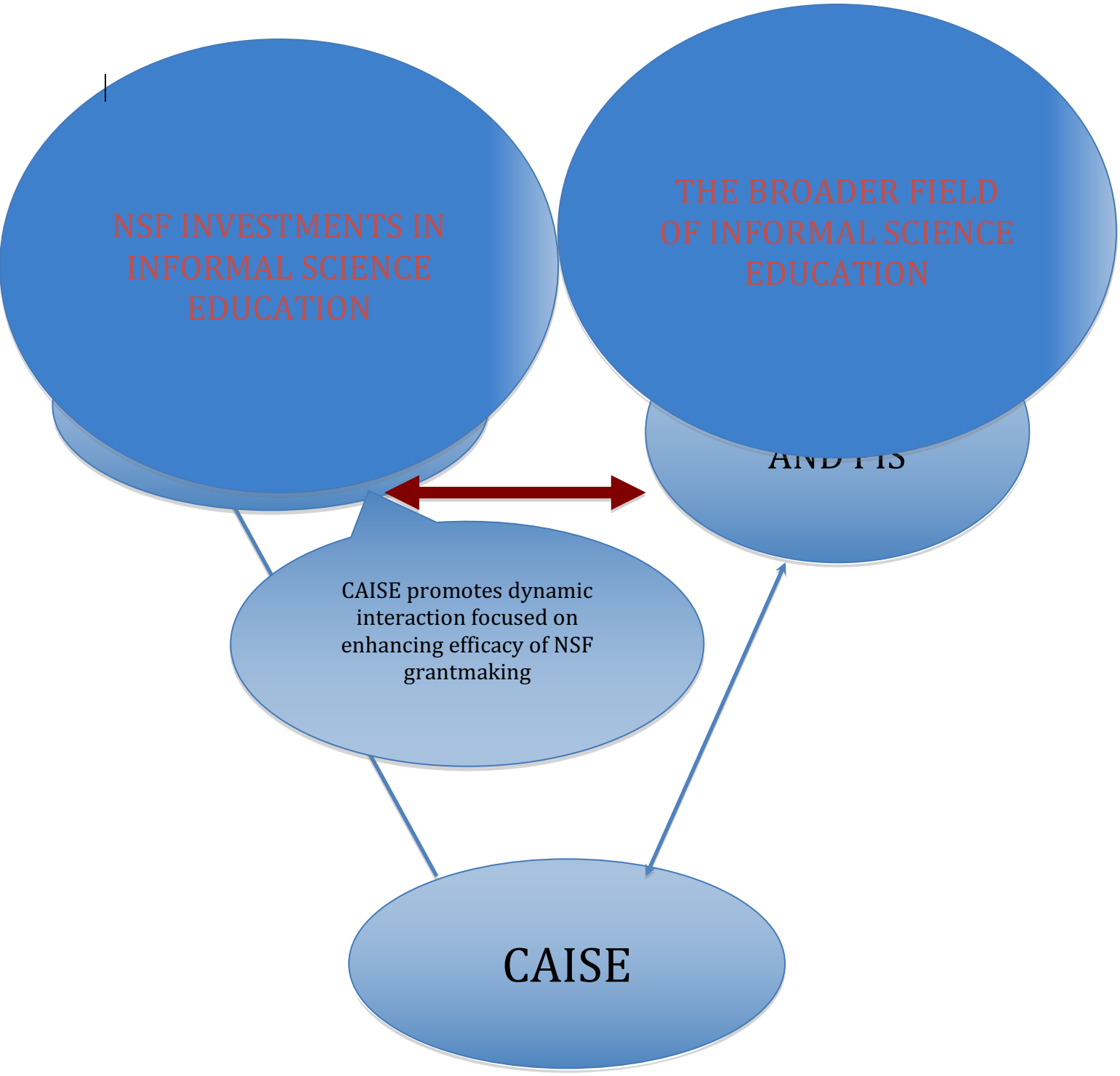
1) It is difficult to explain the value of CAISE to the field when CAISE is still developing, when resources from the most recent round of initiatives have not been widely released to the field yet, and, in fact, when CAISE has had little interaction in the past year-and-a-half with most of the PIs and the ISE field.
2) The mechanisms of phone calls and conference presentations appear to be limited in their potential to reach people.
3) The shifting goals of the Entrée program (formerly the intern and equity strand of work) have made it difficult for the program to get traction.

THE EMERGING VISION FOR CAISE

1) DYNAMIC INTERPLAY

Grantmaking that seeks to strengthen a field is greatly benefitted by strong communication and frequent interactions between those who design and those who implement the funder's initiatives. Ironically, the structures and work load of NSF do not provide many opportunities for program officers to interact with, learn from, and communicate directly with the ISE field – a field they are stewarding and growing through the long-term investment of millions of dollars. Similarly, members of the ISE field have few opportunities to hear and learn directly from NSF. Thus, CAISE can be a vehicle for facilitating and making the most of opportunities for these interactions. CAISE leaders and many of the program officers within the ISE program increasingly see CAISE evolving as a facilitator of the "dynamic interplay" between the NSF ISE program and the ISE-funded projects (and broader field). As

the diagram on the following page illustrates, CAISE seeks to add value to the investments that NSF makes in informal science education by pursuing multiple strategies to maximize interactions with NSF, with the ISE field, and between NSF and the ISE field.


NSF INVESTMENTS IN INFORMAL SCIENCE EDUCATION
THE BROADER FIELD OF INFORMAL SCIENCE EDUCATION
CAISE promotes dynamic interaction focused on enhancing efficacy of NSF grantmaking
CAISE

As the above diagram illustrates, CAISE can help facilitate a more dynamic interplay between the NSF ISE program and the ISE field -- an interplay that in its best case, can lead to a dynamic that is less one-way from NSF to the field, and more reciprocal in its nature. In order to do this, we think CAISE will need to do the following:

1) Be ever seeking of and responsive to the needs and interests of the ISE PI/ Project community. Throughout its history, CAISE has continually sought input from the ISE PI/project community -- through evaluation surveys, through sessions at the PI meetings and ISE Summit, and at conferences that gathered input from the field. CAISE has used this input to guide its work. A recent example of this is the Media convening, which was well-received by both members of the ISE media field, and the ISE program within NSF. Continued work among sub-sets of the ISE field that address specific interests may contribute to strengthening these sub-sets and their ability to contribute to each other's work, to the work of others in the broader ISE field, and to the work of the ISE program as well.

2) Be aware of the needs and interests of the broader ISE field and the ISE domain. The Infrastructure Coordination Roundtable is an example of CAISE responding to the needs and interests of the broader ISE field. CAISE recognized that there were several projects in the broader ISE domain focused on infrastructure improvement efforts, and that coordinating those to increase the leverage of, and reduce the redundancy among, these efforts would be a worthwhile endeavor. Continuing to move forward with infrastructure improvement efforts that make it possible for future funded efforts to build off this work seems like a worthwhile effort.

3) Be aware of the needs and interests of the NSF program officers as well as the opportunities and constraints of the ISE program. The shift in the Entrée program to focus more on outreach to the science outreach community was an example of efforts aimed at helping to further the work of the ISE program within NSF. CAISE's plans in upcoming years to focus on science researchers as a key audience for its work, and assisting the NSF ISE program with its internal efforts to make connections among the directorates within NSF, has the potential to strengthen the work of the ISE field, as well as the ISE program within NSF.

4) Be aware of new research and broader societal and educational trends. As there are larger trends in the world (e.g. cyberlearning, social networking, and organizational networks). CAISE can examine these trends as they apply to ISE, and utilize them as an opportunity to further the work of the ISE field. The ISE Organizational Networks meeting is an example of CAISE's work in this area.

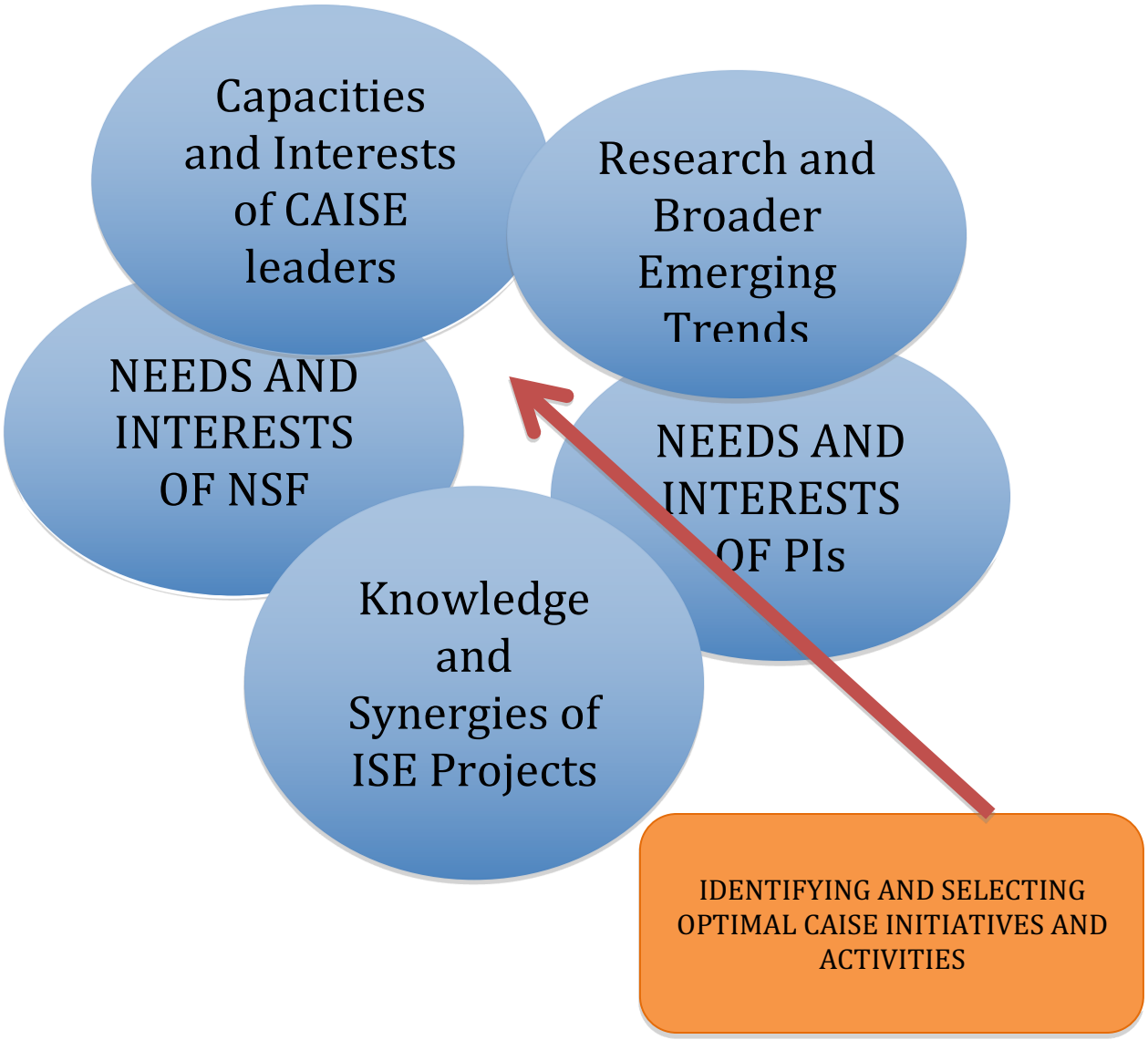
As the examples above illustrate, a dynamic relationship suggests the need for CAISE to be responsive to the both the ISE field and NSF. Identifying key points of

leverage and working in ways that are mutually beneficial to both the ISE field and the ISE program within NSF will be important as CAISE moves forward.

2) IDENTIFYING OPTIMAL CAISE INITIATIVES AND ACTIVITIES

CAISE currently has many different initiatives that may, on the surface, appear unrelated. What is the connection between efforts that promote ISE to research scientists, that seek to help PIs with evaluations, that develop a web-based infrastructure for the field, and small group meetings on specific topics?

The answer is that they are all aimed at improving the efficacy of NSF ISE grantmaking and at improving the ISE endeavor overall. CAISE, we consistently argue, is a value-added endeavor. The initiatives currently undertaken by CAISE were undertaken because they all represent opportunity for advancement of NSF grantmaking and the field more broadly. CAISE initiatives and activities should reflect the best estimates of CAISE, NSF and the field as to where incremental funding can be most productive and achieve the highest degree of leverage. This is outlined in the diagram on the following page.


Capacities and Interests of CAISE leaders
Research and Broader Emerging Trends
NEEDS AND INTERESTS OF NSF
NEEDS AND INTERESTS OF PIs
Knowledge and Synergies of ISE Projects
IDENTIFYING AND SELECTING OPTIMAL CAISE INITIATIVES AND ACTIVITIES

All of the following are ways that CAISE can increase the efficacy of NSF investments in the ISE field:

- Strengthening existing efforts
- Finding synergy by connecting efforts
- Helping to increase the interaction between funder and grantee
- Helping to disseminate knowledge within the field and from the field
- Creating an "improvement infrastructure" that empowers those working in the field

This view of CAISE as an organization that seeks to add value to NSF ISE investments also makes it clear that it is not possible to know specifically what specific initiatives that CAISE is going to be working on in the next three or four years. We do know that CAISE will be doing work that helps to improve the field directly, and helps to build and strengthen the ISE "improvement infrastructure." CAISE initiatives need to be strategically selected and formulated so that the work of CAISE includes a diverse portfolio of efforts which takes advantage of emerging trends, assists the PIs in improving their work, builds connections and relationships, empowers the projects to disseminate the knowledge they generate, and more generally helps further the improvement infrastructure for the ISE field. Negotiating the optimal set of initiatives that CAISE should pursue will involve continued deepening interactions with the NSF ISE program, and continued input from the ISE program and the field.

3) CAISE GOVERNANCE AND ADMINISTRATION

In addition to evolving its vision, mission and key audiences, CAISE is also structurally evolving from an organizational arrangement that was largely a partnership involving ASTC, OSU, VSA and UPCLOSE to more of a resource network with CAISE itself at the hub of that network. CAISE, housed within ASTC, seems less of an ASTC off-shoot and more of its own entity with the evolution in PIs. The increased involvement of a core group of ISE program officers and senior advisors in specific initiatives has also been helpful in moving CAISE toward a more responsive organization. The increased involvement of program officers, advisors and project leaders has helped move the work of initiatives forward, and in keeping the broader group of ISE program officers aware of CAISE's work.

OPPORTUNITIES AND CHALLENGES GOING FORWARD

CAISE has learned a great deal from its efforts over the past five years, and the NSF ISE program has learned much from these efforts as well about what the ISE program within NSF, the PIs and potential PIs and the broader ISE field need, and how a resource network can best serve these different audiences. As it moves forward, we see several key opportunities and challenges.

Being the facilitator of the interplay between NSF and the field brings with is both opportunities and challenges. It will be important for CAISE to choose its targets for intervention carefully; this will require a disciplined, transparent process of identifying and deliberating options for future CAISE work to optimize the leverage of the investment made in it. CAISE will need to be both strategic and opportunistic.

We encourage CAISE and the NSF ISE program to continue to focus efforts on work that identifies and draws upon the strengths of the field. A resource network is not simply a means for disseminating information from CAISE to those in the field; a network is a mechanism for identifying and drawing upon expertise that already exists in the field. (Citizen science is a good example of CAISE helping to share expertise from the field with the field.) Another area where this mindset might be helpful is the current CAISE work on strengthening evaluation where it would be good to learn from evaluators as well, about evaluation and about their work with the ISE program.

Finally, for understandable reasons, the majority of PIs and the broader field remains unaware or confused about the role and work of CAISE. It may be that CAISE is, in fact, not a service organization that broadly serves all the needs of the PIs. CAISE has focused its work on a two-year cycle leading up to the bi-annual PI/ISE summits. This structure works well, but requires diligence and continual outreach on the part of CAISE to the ISE PIs and the broader field so that they understand what CAISE is and how it works. We recommend CAISE revisit its communication and outreach strategy, and find ways to further involve and inform PIs in creative and ongoing ways.