Overview

In an effort to better understand the needs of the ATE community and in order to strengthen and support the projects and centers a set of phone and face-to-face interviews were conducted with ATE PIs in 2010 and a follow up survey was conducted with the larger community in the summer of 2011. The one-on-one interviews were conducted by ATE Central PIs and the answers were compiled with help from Morrill Solutions staff. Twenty-seven interviews took place, most lasting approximately an hour, though some went almost two hours.

The interviews in 2010 focused on benchmarking types of questions – e.g. "What do you think are the greatest strengths of the ATE program for the education community as a whole?" – as well as questions about how ATE Central can better support the goals of individual projects and centers. PIs were guaranteed anonymity in their answers and calls were not recorded so this final report comes from notes taken by the interviewer during each individual interview. The web-based survey that followed in 2011 built on the questions asked of centers, but broadened the scope to include projects. At the end of this report you will find data from the larger community survey.

Each year, reports from these types of interviews and surveys will provide general feedback and guidance to ATE Central, the ATE community and NSF, without naming specific projects or PIs. Before each yearly report is complete, all project and center PIs will have a chance to look over the report and provide additional feedback to ATE Central staff.

Highlights

- If there was one overarching theme throughout the interviews, it was **the economy**. Programs and projects, schools and industry, students and faculty are all being impacted. In some cases the stories PIs told had a sort of double-edged quality to them – for example one program worked with an industry that was growing so rapidly that students were being hired before finishing their degree. Bad for matriculation rates; a huge vote of confidence from industry in the sense that they viewed these students as incredibly well trained before completing their school work. Many PIs talked about fast track programs that helped students get through their degree programs quickly being desirable for just this reason.

- Not surprisingly, given the current frustrations with funding, **sustainability was a hot topic** during the interviews. Many PIs spoke of their **frustration** with the definition of sustainability as it relates to their project or center. They felt that it was unrealistic that they were expected to somehow fully sustain their project, especially with the economic situation colleges and industry are facing currently. They called for a redefinition of sustainability or at the very least a real acknowledgement that even partial sustaining of a project (i.e. getting courses adopted and institutionalized) should be recognized as significant success.

- PIs have excellent **examples of the economic impact** that their center was having on industry. Whole new programs have been started at schools, and industry is able to hire students with more confidence knowing that they are fully trained to meet job requirements and retraining has become a deep focus for many centers with the economic climate we are currently experiencing. One simple but powerful example given was that a center that did a ROI study and was able to provide evidence that for every $1.00 their industry invested in scholarships they got a $5.64 return.

- There was a great deal of **excitement about ATE Central** and the potential support it could lend to the ATE community. Several PIs mentioned that it would be very helpful if ATE Central could act as a conduit to help provide project and center PIs with more information from NSF that they could use in turn on their own campuses, states and regions. They wanted more aggregate data about impact and specific examples of impact that cut across projects and that could help them make the case for growth and sustainability of their own projects. Another suggestion that ATE Central take a leadership role in helping PIs' understanding of how to best to use social networking tools (twitter was often mentioned) to enhance their projects and drive their outreach and dissemination components forward. There was a great deal of interest also in figuring out the best ways to use webinars; should they be used for in depth trainings at all or just for teasers?

- Almost all PIs felt that they wanted to **know more about what other centers and projects are doing** – some mentioned just staying abreast of events or news, others wanted more connection around topics like project management or even staffing issues. Many of those interviewed expressed a desire to have a way to easily look at best practice documents and several PIs wanted to be able to easily find things like contact information or a full list of projects who are doing work in a similar area (either geographically or topically).

The interviews were extremely useful in understanding both the strengths of the ATE community and the challenges it faces. The information gleaned each year from these types of interviews will help drive ATE Central forward and provide direction and feedback as the project grows and matures.

The Details

1. *What do you think is most important to get across to educators about the ATE program? What are the program's strengths?*

In discussions related to how to best help STEM educators understand the strengths of the ATE program and the benefits of participating in the community, PIs tended to divide their answers based on whether we were talking about engaging faculty who were thinking about actually writing an ATE proposal vs. faculty who were looking to use the deliverables from an ATE project or center in the classroom or as a source of professional development. Some of those interviewed focused mostly on the strengths, philosophical underpinnings, or direction of the ATE program itself and why that would appeal to educators. Others thought the best way to promote ATE to STEM educators was to concentrate on the appeal of the deliverables from the actual projects and centers.

ATE IS COMMUNITY COLLEGE FOCUSED

The fact that the ATE focuses on funding projects **based in community and technical colleges** was consistently seen as a huge strength, one that should be emphasized whenever dealing with faculty and adjuncts at these institutions. There was discussion about the fact that for many community and

technical college faculty they don't know that the ATE program exists and that they can look to the program to provide funding for curriculum and professional development projects.

ATE IS TECHNICIAN FOCUSED

Grantees brought up the uniqueness of ATE in its concentration on **technician training** and several felt that this was an key point to get across to other educators. There was discussion about the need for educators from STEM disciplines to better understand the importance of well-trained technicians for industry and the differences between technician training and four year programs.

There was also discussion about the uniqueness of the technician focus that the ATE program has within NSF. As one PI put it "we need more technicians than engineers." PIs felt that the applicability was important to address; that technicians who come out of the ATE program have a real range of opportunities after graduation.

ATE IS INDUSTRY AND WORKFORCE FOCUSED

Another area that was stressed over and over was that ATE is **industry driven** and that it responds to workforce demand. A point to stress with educators is that ATE is looking at what technicians need once they are done with school and that the curriculum developed through projects and centers is **aligned with real workforce needs.** One PI stressed that often skills aren't taught enough (they differentiated between knowledge and skills) and they felt that students really need hands on experience and skills in many jobs – not theoretical knowledge.   ATE projects and centers focus on these critical skills.

PIs felt that the connection to industry and job skills is missing for a lot of faculty – they teach biology or botany but it's not tied to or integrated into a particular career.   The ATE program and its projects and centers can really help faculty understand the careers and specific skills required of students after graduation.

ATE IS FORWARD THINKING

It was mentioned multiple times by various PIs during the interview process that **ATE is a program that looks to the future** – that it focuses on teaching the things that students should be learning now to get them a job and helps train students for real jobs in today's (and tomorrow's) economy.

ATE IS A FUNDING OPPORTUNITY

The fact that the ATE focuses on **funding projects at community and technical colleges** was consistently seen as a huge strength, one that should be emphasized whenever dealing with faculty and adjuncts at these institutions.   There was discussion about the fact that for many community and technical college faculty they don't know that the ATE program exists and that they can look to the program to provide funding for curriculum and professional development activities.

ATE DELIVERS VALUABLE RESOURCES AND OPPORTUNITIES

Project and Center **deliverables** are seen as a major strength of the ATE program and the following list provides the most mentioned resources and program components:

1. Online Resources/Website
2. Curriculum
3. Recruitment Tools
4. Mentoring Opportunities

5. Professional Development Opportunities
6. Workshops/Summer Programs
7. Internship Opportunities

2. What areas of your own project do you feel are strongest?

A SPECIFIC PROJECT COMPONENT

Given that many PIs viewed the deliverables of the ATE projects and centers as a major strength of the ATE program, it isn't surprising that this was also viewed a major strength of their own project.

- **Curriculum and other education resource** like kits were mentioned often in the interviews and while PIs acknowledged development of this sort as time consuming and expensive they also thought it was "totally worth it" to put their energy into this important area.

- **Workshops and other educational activities** were mentioned often also although the audience for the workshops varied depending on the center's focus. Summer forums, professional development series, and student competitions were all mentioned during interviews.   As funding has dried up in the past year, **online learning** was mentioned over and over both as method being used to meet the needs of traditional students but also as a possible solution to meet professional development and summer workshop training needs. Many PIs were not happy about this stressing the need for face-to-face time with colleagues, but felt that it might be necessary given the cuts in funding from industry partners.

- **Center websites** were mentioned often as a strength, in particular those centers who had a **resource clearinghouse** of some sort. CWIS, Internet Scout's open source software, was acknowledged as a useful tool for centers that were creating a resource library.

AN APPROACH OR UNDERLYING PHILOSOPHY

Several PIs discussed that a primary strength of their project related to a specific approach they were taking, for example one mentioned that they promoted a **holistic view** of what IT professionals are about -- that their program encourages a specific philosophy that the program is more than "a bunch of skills – that it's integrated knowledge". This particular PI talked about that fact that their program really embraced the process of helping students transition into IT professionals.

Another PI talked about the fact that their center was **particularly good at sharing information and making people comfortable**. They ended up helping educators and others with all kinds of things beyond the normal rang of curriculum or professional development that was part of the scope of their center; this included everything from grant writing to evaluation procedures.

Lastly, PIs mentioned the **hands-on nature** of these programs and felt that this was a huge strength of the ATE projects and centers.

INDUSTRY AND COMMUNITY RELATIONSHIPS

Two primary types of relationships were discussed in the area: **relationships with industry and educational partnerships** of several types.

Many PIs discussed the **synergistic groups of community colleges** that had come together to form the core of their center itself. Depending on the scope of the center this could be a regional or national consortium and sometimes included four-year institutions and universities in the mix. Many of them mentioned the long-term strength of these relationships and that the group had grown

together over a decade or more. There was a lot of discussion about the mentoring that these core institutions did for others in the field and how the fact that their were multiple institutions strengthened and supported greater reach in their mentoring capabilities.

Also of note was the fact that some of these consortiums offered **joint degree programs** where students could take several classes on their own campus and the rest of their classes virtually in order to complete their coursework. PIs felt this type of situation was very beneficial to the schools involved because it allowed them to offer a wider array of degree programs.

PIs also discussed the work they and their centers were doing with **high-school students and educators/counselors** to help smooth the path for students and promote the programs at their institutions. They discussed the strength of events like robotics competitions as an important structure on which to build community and help students understand the benefits of technician education.

The other key area related to relationships that PIs discussed concerned **industry partners**; a critical component of many centers. Articulated often in the interviews was the strength of being able to stay ahead of the workforce needs curve as PIs are getting important **needs-based information from industry** that they feed back to educators and curriculum developers. On PI discussed the importance of being able to work with industry as a group – the fact that their whole consortia worked together with industry partners allowed them to be more innovative and broaden impact. **Professional societies** were also mentioned by a few PIs and their ability to act as a relationship builder between educational institutions and industry was noted.

PIs also discussed the importance of students being able to **work in the field** during their program and the fact that their industry partners were eager to have students participate in these types of training/educational opportunities.

3. What challenges are you and your project facing?

A SPECIFIC PROJECT COMPONENT

For center's that have a resource center focus, there was a lot of discussion about the issues they faced concerning **collection development**. Many discussed the fact that they struggled with figuring out whether to focus on **quality or quantity**. Those who raised this issue had decided to go for quality first and have a smaller targeted collection. Some felt that NSF didn't understand this decision and were struggling with the consequences; whether to expand the collection even if it meant lowering the quality. Many were also struggling with issues related to **collection maintenance**; how to update materials on an ongoing basis.

One PI in particular discussed the issues related to **keeping curriculum linked to industry standard**s. Given that industry needs may vary depending on geographic location and other factors, creating curriculum is rarely a one-size-fits-all situation.

ISSUES OF ECONOMY AND SCALE

As mentioned in the highlights section, this area was mentioned often as a primary challenge for PIs. The words **economy and sustainability** came up over and over. Many mentioned the frustration with trying to figure out how to come up with a realistic sustainability plan when writing their proposal; one that satisfied panelists and NSF but was also realistic. Several PIs talked about the struggle to create a **sustainable infrastructure at own institution** – how to make their project an important part of the programs there and getting funding from the institution itself. With both

institutions and industry suffering during the economic downturn there are not a lot of options for many centers in terms of finding funding outside of the NSF or other federal/philanthropic entities.

The economic downturn also influenced PIs **vision of scalability**. Although one PI in particular mentioned the Synergy Project and the support they felt they had through Synergy to address issues of scale, the overall feeling amongst PIs who mentioned scale was that given the economic climate it was to figure out how to build a program that was "scalable and replicable." Many PIs literally talked about how they needed more money to move forward with their project and really couldn't figure out how they were going to find the dollars to add staff or equipment. With travel budgets being cut they were struggling with **how to fund travel for summer institutes, workshops and trainings** – matching funds from colleges have vanished because of bans on summer travel or workshop travel at many institutions. Lab classes have become a huge struggle because they need to stay small to be effective and at the moment many institutions find themselves in a position with more students and less faculty available. Some PIs shared concerns about issues related to **bureaucratic and financial issues** like managing sub-awards.

TECHNOLOGY AND CYBERLEARNING ISSUES

PIs discussed their own challenges in **understanding if and how to best use social networking technologies** like Twitter. LinkedIn and Facebook in their centers. While some PIs were very enthusiastic about these tools others had serious reservations in terms of their usefulness. They talked about how much staff time they seemed to take up and were unsure of the ultimate benefits gleaned from integrating them.

Podcasts and webinars came up often in discussions; PIs wanted more information about technology to use in creating podcasts/vodcasts and help determining which platforms they should use for webinars. The idea of ATE Central having a centralized platform that the community could all use was raised.

The PIs also talked candidly about **the pressures to have more online courses** and the need to be able to rapidly modify these courses to meet special situations like the needs of incumbent workers. One PI in particular talked about the issues related to their college administration and leaders not coming from particularly technical backgrounds and not always understanding the need for technology.

INDUSTRY AND COMMUNITY CHALLENGES

While PIs view industry connections as a critical component of the ATE program, relationships with industry are not simple. **Issues with industry partners** surfaced during the interviews. One PI discussed the difficulties encountered when trying to set up student internships and faculty externships as a result of industry concerns about intellectual property issues. Another PI mentioned the difficulty in certifications and that industry in their particular field had been leery of creating a formal certification program. Issues related to economy were raised here too in that as industry downsizes, one of the things that suffers is the connections to programs like ATE – the lack of equipment donations was mentioned; difficulty with internships; difficulty getting industry members to serve on boards.

Several PIs discussed **challenges in dealing with faculty**; trouble getting faculty on board programmatically. They felt that faculty seemed less engaged and less willing to participate in programs outside their regular teaching.

One PI talked about the difficulty in creating a truly integrated set of connections for their urban region that linked K-12, community colleges and universities. **Articulation agreements** were a common challenge for center PIs and the difficulties in creating and maintaining them were voiced.

Some PIs articulated **difficulties within the ATE community**. Several felt that their wasn't enough communication between centers and between centers and project. There was discussion about a feeling of isolation. On PI suggested that centers might get additional funding to come together as a smaller group and work on specific issues with ATE Central to share issues and do more collaborative work.

One PI discussed the **challenges in recruiting and retaining minority students**. While they had taken steps to bring in leaders from the Hispanic community in the early stages of their project, they were still struggling with creating a long-term support system for Hispanic students.

4. What avenues do you use for outreach (presentations, booths, email, newsletters etc.)?

Less and less centers are using direct physical mailings as outreach – dissemination efforts focus squarely on **the web and email.** Centers rely heaving on their own website and most have a database of email contacts (from those who register at the website, meetings or conferences) and most PIs agreed that direct email was one of the more effective ways of reaching their audience. Email blasts were seen as less effective than **individual targeted emails** as they often ended up in junk folders. PIs were **conflicted about social networking tools** as outreach mechanisms; most felt that they still weren't sure of their value but were willing to experiment given their popularity.   Unlike social networking tools, **webinars** were seen almost unanimously as a useful outreach mechanism by most PIs. Electronic **newsletters** were also viewed favorably.

Many PIs talked about the fact that they did fewer booths and that if they did a **booth** they felt the most effective situations were in **smaller venues**. For example, college fairs or information nights were both mentioned.

Several PIs discussed the usefulness of figuring out who key decisions makers were and just **picking up the phone** – word of mouth was also mentioned several times as an important component of outreach.

Marketing in tandem with others was seen as extremely beneficial. **Industry partners and conference**s were seen as a really useful way to help boost outreach - sharing a booth at an industry conference with an industry partner for example. **Professional societies** were also discussed as useful outreach partners; one PI mentioned having access to the entire professional societies email list for announcements; another discussed being able to put announcements and events in newsletters. **The ATE Centers booth and the ATE PI meeting** were both mentioned as great opportunities for doing outreach and for understanding what other projects and centers were using in their own outreach efforts.

5. What are you interested in learning about other projects and centers?

BEST PRACTICES, COMMUNITY BUILDING AND PROJECT MANAGEMENT

There was consistently interest in learning about **center and project best practices** in areas like evaluation and sustainability. An issue raised in one interview in particular was that it's not enough to just share this type of information online – that as a community we need to figure out how to **harness it and make use of it**. As a community we need to present and share this information in ways that make it truly helpful.

Organizational models were of interest to several PIs – how are things actually accomplished at projects and who does what. They wanted to see examples of successful practices, events and success stories from centers and projects and they delivered impact. One PI felt that this was one of the great benefits of ATE Central. That it could deliver a centralized system of showcasing best practices of centers and projects in all areas, how they promote themselves, how they develop their materials and their services.

Some PIs mentioned the need for **basic tools to build community** and that gave them access to PI names and contact information all in one place (something that ATE Central could address) making it easier to connect with other PIs, find or provide mentoring, or seek out collaborators.

SUSTAINABILITY

Sustainability was a huge issue all through the discussions with PIs. The areas mentioned by PIs ranged from direct funding issues to understanding more about best practices to looking to find methods to better connect with their own campus administrators in looking at issues of sustainability.

There was real interest in having a better sense of **funding opportunities** beyond NSF (and/or beyond the ATE program) and understanding how to apply for such funding. PIs wanted to learn more about whether other centers or projects (or ATE Central) had knowledge about these types of opportunities. There was also interest in learning more about good ways to approach industry for funding; especially in these lean economic times.

This was an area where the need for **best practices** was raised over and over along with the frustration of trying to figure out just how to define sustainability. PIs felt that given the economy it was hard to know just what it meant to sustain their center and even harder to figure out how to actually accomplish long-term sustainability. They were curious about how others in the community were approaching this issue.

TECHNOLOGY, TOOLS AND CYBERLEARNING

PIs were very interested to know what other centers and projects were using in terms of their own in house **tools and platforms** for webinars, websites, blogs and podcasts. They were also curious about who they could turn to in the community to get good information about the use of **social networking tools** (and whether these tools were providing a good return on investment).

Really good idea to provide more information about technologies, sustainability

EVALUATION

PIs also brought up the need for more **help and support in the area of evaluation**. One PI who was newer to the community mentioned that they were a bit overwhelmed by trying to figure out how to do solid evaluation and nervous about getting this part of the project right. While acknowledging the benefits of the EvaluATE survey in that it provides aggregate programmatic data for all of ATE, several PIs expressed some frustration with the amount of data they need to provide and that they couldn't track throughout the year. This was also an area where the need for **best practices** was mentioned.

OUTREACH

Many PIs mentioned the need to understand more about what events and outreach mechanisms were successful for other centers and projects. There was also interest in techniques related to social networking and outreach and whether others were feeling these were good dissemination pathways to use in education settings.

6. *Given what you know at this point about ATE Central is there anything specific that we can do to help support your project?*

BEST PRACTICES AND CASE STUDIES

Harkening back to the last question related to what PIs would like to know about other centers and projects, **best practice** information was mentioned again this time as area where ATE Central could be helpful. PIs wanted to see more information on what other centers and projects are doing in areas like evaluation and sustainability complied and showcased on the ATE Central website. They were also interested in learning what projects beyond the ATE community are doing in these areas. **Evaluation models and sustainability case studies** were specifically mentioned and PIs would like to see a section of the ATE Central site and Handbook that were specifically focused in the area of best practices and case studies. One PI suggested a **centralized glossary of terms for the ATE community** as names often overlap (for example the term vector means different things in biotech and in geospatial). To help remedy this ATE Central could have an interactive glossary including acronyms and terms

SUPPORTING COMMUNITY BUILDING AND OUTREACH ACTIVITIES

There was much discussion about how ATE Central could help with community building activities and help connect projects and centers. One PI suggested that ATE central send new projects a "**welcome to the community**" postcard or packet; another PI suggested sending smaller projects information about which larger centers or projects be good for them to connect with. Several PIs mentioned that **support for those in the ATE community who are writing new ATE project or center grants** would be helpful, helping them find collaborators or partners or providing them with information on sustainability or evaluation. General support for projects or centers that are looking to **promote events** like summer institutes was also mentioned; helping get word out to the education community about opportunities was seen as something ATE Central might be able to help with as well as channeling events out to other centers and projects.

Several PIs mentioned that they thought **one-on-one phone calls** were very helpful and allowed for open discussion and dialogue about needs.   Engaging the community was a theme that was raised and trying to think about more **creative and really useful ways to engage the community** was seen as a challenge that ATE Central should undertake.

CONNECTING PROJECTS AND CENTERS MORE DEEPLY TO NSF

Unexpectedly, several PIs raised the issue of feeling that they needed to get **more information, more regularly from NSF**. PIs were eager for access to aggregate data about impact and specific examples of impact that cut across projects that could help them make the case for growth and sustainability of their own projects. They felt this type of data could be used in any number of ways on their campus or with the state in showcasing the efficacy of their ATE project and the ATE program as a whole. PIs mentioned that they felt ATE Central was an ideal conduit to help feed data from NSF to projects and centers. One PI felt that **ATE should act as a central clearinghouse** and that it would be easier to go to ATE Central for this type of information than to the NSF site.

PROVIDING EASY TO USE MATERIALS FOR OUTREACH

PIs were very interested in ATE Central **providing materials for use in their outreach and promotion efforts**. Often mentioned were photos and power-point presentations as well as

templates for materials like brochures, postcards or posters that were well designed and could just have text plugged into text boxes and printed.

TECHNOLOGY AND METRICS RELATED SUPPORT

PIs voiced the desire to **get support from ATE Central and help with technology and metrics related issues**. As previously mentioned several times in other sections, many PIs are struggling with whether social networking tools are useful and how to best implement these tools in educational settings. They felt ATE Central was an ideal host for information of these types. PIs also want better information about which webinar platforms to use and how to host effective webinars. They were also interested in learning how to best track usage and impact data about their project websites and resources. They were also interested in guidance on how to get better hit-rates in general and on Google in particular and more help driving usage to their sites.

COLLECTION DEVELOPMENT AND MAINTENANCE INFORMATION

PIs were very interested in getting information and attending workshops and webinars related to **collection development**; they felt ATE Central would be an ideal group to facilitate these sorts of events. **Metadata** workshops and information were also mentioned as a real need, particularly by PIs of resource centers.

7. Given what you know about ATE Central, what can we do to promote ATE as a whole?

HELP STRENGTHEN AND CLARIFY THE ATE BRAND: THINK BIG

PIs were keen to see the ATE brand strengthened; many felt that too few educators know about ATE as a program. They were also concerned about helping educators and others understand what the ATE brand meant and linking this brand to technician training. They felt that ATE Central should try and promote the project as a whole and several of them suggested thinking big: national advertising on NPR or WGBH was mentioned. Having ATE Central support the creation of ATE (the brand) promotion videos was discussed and YouTube was mentioned several times as an ideal way to push this sort of video out to students and the public.

One PI suggested that the word "ATE "should always be integrated into project and center titles and featured prominently on sites. Several PIs mentioned how critical it was for ATE Central to connect to other crosscutting projects like MentorLinks and the Centers Impact site. Several PIs talked about how important a map interface was on ATE Central– because it shows all projects and centers in such a visual way.

HIGHLIGHT CONNECTIONS TO INDUSTRY

PIs wanted to make sure that the ATE portal was showcasing connections to industry. One PI suggested that ATE Central work with centers and projects to make sure that any industry they worked with was listed on the ATE Central site. A suggestion was also made to show industry connections for the whole ATE program on a map interface.

SUPPORT CC EDUCATORS WHO ARE WRITING ATE PROPOSALS

PIs also felt that ATE Central was an ideal project to help educators from the community college sector applying for ATE grants – especially those new to NSF grants or to grant writing in general. They

mentioned linking these users to potential collaborators and mentors through the ATE Central portal and possibly even provide Fastlane information or training at the ATE Central portal.

8. *What type of technology are you using and what, if any, new technologies do you plan on in the near future?*

TECHNOLOGY BEING USED CURRENTLY

In discussions around technology currently being used, most PIs talked about their own website, webinar and other meeting software, and the use of social networking tools like Twitter and Facebook. The following list gives a brief overview:

- **Website** – the most often discussed technology being used by PIs was their center website.

- **Webinar/Meeting Platforms** – webinars are becoming more and more important (especially given budget cuts to travel) and PIs were using this technology a lot. There was real interest in a centralized platform at ATE Central.

- **Twitter** – although some PIs struggled with whether Twitter was useful, there were many Twitter advocates.

- **Facebook** – similarly, Facebook has dedicated users amongst PIs along with those who are less sure of its value.

- **CWIS or Other Digital Library Software** – for those projects with a resource center, some sort of library software or underlying database was being used to store metadata.

- **Blogs** – while not very many PIs mentioned having a blog it did come up in several conversations.

- **Wikis** – not mentioned often, but used for infrastructure in a couple of cases.

- **RSS** – more popular than several years ago, RSS feeds are beginning to make more appearances in the community.

- **Specific Lab Software** – this was raised by only one PIs but for this center it was critical.

- **Software for Online Teaching/Learning** – several PIs raised this as an important component of their center's infrastructure.

TECHNOLOGIES BEING CONSIDERED OR ADDED SOON

For many PIs discussions around what they were thinking about adding to their technology toolkit centered around social networking tools – many were considering **Twitter or Facebook** but unsure about the value. **Blogs, wikis and RSS feed**s were also mentioned often as possible new technologies. Several PIs mentioned that they were in the process of **redoing their center website** and struggling with what to integrate into the site.

9. *Do you know of any ATE projects or centers that were able to successfully sustain or grow themselves once finished with their NSF funding?*

The short answer to this question was no in almost every interview– and most PIs started out being quite definitive about this. However, as the conversation deepened around this topic it became clear that many centers and projects have figured out ways to partially sustain components of their work.

Many PIs discussed how they had begun to look at the issue of sustaining their center more creatively, including **membership models, joining forces with other organizations and professional societies, and looking to industry partners** for support. Some PIs reported that a specific project component could sometimes hold it's own and become self-sustaining – for example summer institutes. PIs also mentioned **integrating core curriculum or programs into their institution** or degree programs as a step towards sustaining the center's work long-term. Some PIs were able to pin down exactly how much funding they had from non-NSF sources; others were less definitive.

10. *If you asked your industry, what would be the economic impact of your project or center?*

Discussions with PIs in this area were filled with specific stories about how their center or project was **making a difference for industry, local, regional and national economies, student and faculty.** While the stories differed in particulars, there were several commonalities that illustrate the strong economic impact of the ATE program.

EDUCATIONAL PROGRAMS DRIVEN BY INDUSTRY NEEDS

Many PIs talked about the value, economic impact and desirability of **working alongside industry to create curriculum and a variety of programs** (degree programs, internships, externships and apprenticeships) that truly met industry standards and needs. PIs helped other community colleges add whole new degree programs, radically change curriculum, and boost the economies of entire regions. PIs referred to industry partners calling their curriculum and programs "cutting edge" and discussed technician apprenticeship programs with hundreds of students a year being placed in industry settings.

WORKFORCE READY GRADUATES

By aligning curriculum and programs to meet the specific needs of industry, students who come out of these programs come to into the workforce **well prepared and in need of less on the job training** (one industry partner estimated that they save six months salary per worker in not having to do on the job training). Many PIs discussed the fact that the industry partners they worked with were now able to hire students directly out of their programs (to their chagrin, sometimes before the student graduated) with confidence. One PI mentioned that they worked with an industry that had a on-the-books policy of only hiring students with a four-year degree; by working with the PI and seeing the caliber of the students coming out of their two-year program, the company changed this policy. Another PI mentioned that their students were not only being place well in industry jobs, but in research labs in university settings too, a real indication of the student competency and job-skills. One industry partner articulated that they wouldn't have been able to continue being based in the state they are in if it weren't for the ATE program and the well educated workforce they are producing for that industry.

RETRAINING AND RETOOLING THE WORKFORCE

PIs also talked about the impact their programs have had on **retraining today's workforce.** Whether these are employees of a specific industry who need to tweak their skills to match new standards or technology or students who are changing careers, ATE programs provide industry with training, materials and programs that support industry's educational needs. Helping retool the current workforce and working closely with industries own educational programs was mentioned by several PIs as a key impact and something industry partners sited as extremely valuable.

About the 2011 Community Survey

The ATE Central 2011 Community Survey was conducted in the summer of 2011 and posed a similar set of questions to the larger ATE PI community, in an effort to include the perspective of project PIs. Many of the questions provided scaled answers– so that participants could signify how important an issue or challenge was to them. The responses from the larger PI community mirrored to a great extent what was heard in the one-on-one interviews.

OVERVIEW OF SURVEY PARTICIPANTS

The survey was sent out to 258 PIs and 119 (46%) responded. Of those, 84 or 70.6% were from projects and 27 or 22.7% were from centers, 8 others were designated staff from projects or centers, or PIs who had both project and center funding.

Most respondents had been funded between 1 and 3 years (51 or 42.9%), 21.8% or 26 respondents had been funded from 5 to 10 years. The remaining participants were almost evenly divided between less than a year (16), 3 to 5 years (13) and more than 10 years (13).
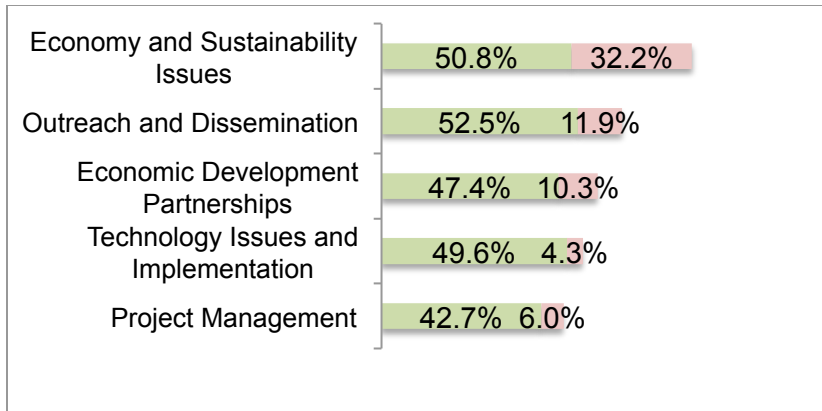
Those who responded came from a variety of fields of study, Bio and Chemical (20), Manufacturing (16), Engineering (14), Information and Security (13), Agriculture and Environmental (11), Micro and Nano (6). The rest of the respondents either classified themselves as General ATE (19) or Other (47), with clarifications like "Energy" or "Faculty Development."

PROJECT AND CENTER STRENGTHS

Respondents were asked to rate the strength of several project components - curriculum and educational material development were rated most often as being a significant strength of projects and centers. Partnerships with industry were a close second and professional development was third.
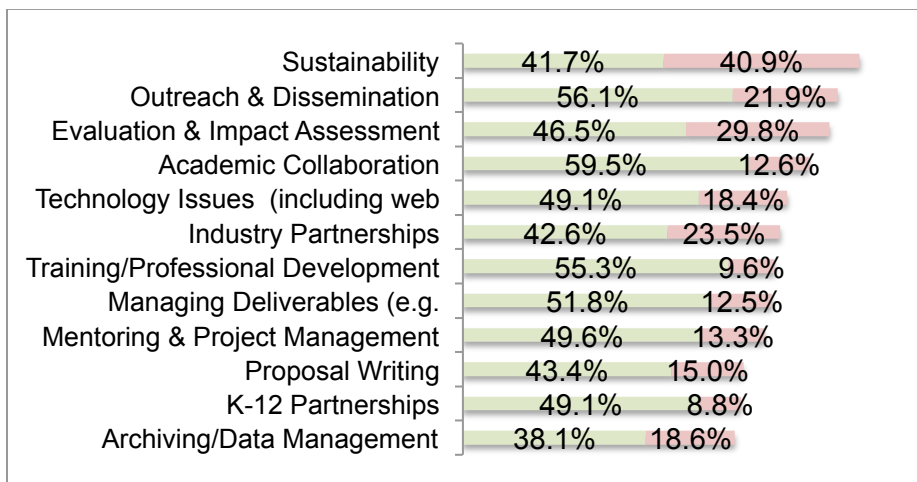
PROJECT AND CENTER CHALLENGES

Centers and projects agreed that sustainability and issues related to the economy were their greatest challenge of the choices provided in the survey. This mirrors the primary concerns expressed during the one-on-one interviews done prior to the survey with center PIs. The following chart shows the areas that participants rated and how they rated them.

Economy and Sustainability Issues	50.8%	32.2%
Outreach and Dissemination	52.5%	11.9%
Economic Development Partnerships	47.4%	10.3%
Technology Issues and Implementation	49.6%	4.3%
Project Management	42.7%	6.0%

■ Challenge   ■ Significant challenge

AREAS WHERE PROJECTS AND CENTERS WOULD LIKE SUPPORT

Participants were provided with a fairly long list of potential areas to rate in terms of their desire for support. These were chosen in part based on project components articulated in project and center descriptions, information in the ATE RFP, areas discussed in the one-on-one interviews and feedback from others in the NSF and ATE communities and the ATE Central NVC.

Sustainability	41.7%	40.9%
Outreach & Dissemination	56.1%	21.9%
Evaluation & Impact Assessment	46.5%	29.8%
Academic Collaboration	59.5%	12.6%
Technology Issues (including web	49.1%	18.4%
Industry Partnerships	42.6%	23.5%
Training/Professional Development	55.3%	9.6%
Managing Deliverables (e.g.	51.8%	12.5%
Mentoring & Project Management	49.6%	13.3%
Proposal Writing	43.4%	15.0%
K-12 Partnerships	49.1%	8.8%
Archiving/Data Management	38.1%	18.6%

■ Desire support   ■ Desire significant support

Again, these areas match up with many of areas articulated in the one-on-one interviews, with sustainability and outreach topping the list. The chart above, along with the data gained in interviews will help guide ATE Central priorities and activities.

Thanks

Many thanks to the ATE PIs who were willing to take the time to share their data, thoughts, stories, triumphs and challenges. It is our hope that this report will help the ATE community, the National Science Foundation and, of course, our own project ATE Central, find better ways to work together and ultimately continue to strengthen the education of STEM students in community and technical colleges across the US.