Center for
Technology in Government

Knowledge Sharing Innovations in the Natural Resources Community

A toolkit for community-based project teams



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Preface

"The Electronic Commons: a community led natural resource knowledge portal" was a collaborative program developed by the Wood Education and Resource Center of the United States Department of Agriculture (USDA) Forest Service, Northeastern Area States and Northern Initiatives. The program was designed to increase understanding of the potential benefits of and challenges to using information technology for communication and knowledge sharing among natural-resource professionals and volunteer organizations, schools and communities neighboring national forests, as well as individuals interested in learning about natural-resource management. Eight project teams were funded to explore technology-based strategies such as Web sites and Webinars as tools for sharing knowledge on natural-resource topics of concern to their communities and to build communities of practice.

This toolkit is the product of a ninth project funded through the *Electronic Commons Program* to produce a guidance document for future similar efforts undertaken in the natural resources community. The Center for Technology in Government (CTG) (www.ctg.albany.edu) at the University at Albany in New York was added to the *Electronic Commons Program* with a focus on documenting the experiences of the eight project teams for use by others with similar conditions and objectives. To capture the experiences and insights of the project teams, CTG conducted a series of teleconferences with each of the teams. The teleconferences were also used to provide advice to the teams, drawn from the Center's experience in working with government agencies and not-for-profit organizations involved in information technology innovations. Each teleconference involved discussions about problem and context analysis, project planning and technology decision making. These sessions drew heavily on *Making Smart IT Choices*, a publication CTG developed to guide government managers through the problem analysis and project planning required in successful government information technology innovations.

Following the teleconferences CTG conducted a two-day reflection workshop with representatives from each of the eight projects to reflect on preliminary findings from the teleconferences and to capture additional detail on the projects. This toolkit is the product of these conversations; in it we present insights from the project teams, both in the opportunities and challenges facing them in their particular project, as well as the utility of the various resources, such as *Making Smart IT Choices*, made available to the teams. Advice for use by funding organizations was also captured from the project teams and is shared here as well.

An ala carte approach to the Toolkit

This toolkit was written for two primary audiences – the first is project managers engaged in information technology-based innovations in the public and not-for-profit sectors and the second is funding agencies. While the full toolkit has value to both audiences, specific sections may be more suited to certain readers as a starting place.

Program or Project Managers…

…managing multi-organizational, geographically separated teams, might start at:

- Chapter 5, Critical Success Factors, which focuses on the strategies the eight project teams found key to their success.
- Chapter 3 subsection, titled "*Working in multi-organizational, geographically dispersed teams,"* which provides a sense of the obstacles project teams face in this context.

…selecting technology to support a multi-organizational, geographically separate team, might start at:

- Chapter 4 subsection, titled "*Choosing the right technology for your teamwork – virtual or otherwise,"* which provides guidance to project managers on the kinds of questions a project manager should have the answers to before selecting technology to support communication and collaboration among team members.
- Appendix B, which identifies the technologies used in the eight projects and summarizes the related experiences of each team in selecting and using technology.

…selecting technology for sharing knowledge among geographically dispersed audiences, might start at:

- Chapter 4 subsection, titled "*Choosing the right tools to share knowledge,"* which provides information on the issues in the environment project managers should pay attention to when selecting delivery tools.
- Chapter 5, specifically subsections "*Align purpose with identified needs and capabilities of your stakeholders"* and "*Understand and be comfortable with the technology*," which offers guidance on how to ensure stakeholders' needs and capabilities are taken into account when choosing technologies.
- Appendix B includes a set of tables organized around the characteristics of the various projects and of the technologies employed in each project.

…writing a grant proposal for technology-based knowledge sharing innovations, might start at:

- Chapter 6, which provides guidance on the grant proposal process collected from the eight grantees.

Funders…

..awarding small grants aimed at technological innovation in the non-for-profit sector, might start at:

- Chapter 2, Assessing Impact, which highlights the value delivered to the natural resources community by the eight projects.
- Chapter 3, Environmental Complexity, which presents observations about the obstacles not-for-profit agencies face when engaging in innovation, technology or otherwise, and provides guidance to assist project teams in overcoming these challenges.
- Chapter 6 provides additional advice to funders on creating a set of conditions to increase the likelihood that funds provided to project teams will generate the expected outcome.

Chapter 1 - Introduction

The *Electronic Commons Program* was created to fund knowledge sharing projects; in particular projects related to natural resource-related training, technical assistance and community building using advanced communication technologies. As is the case in most projects, each stakeholder in the *Electronic Commons Program* had unique but related questions they were hoping to address. From the perspective of the project sponsors, the Wood Education and Resource Center, their questions related to the impact of their investment:

- Can small grants to community-based organizations make a difference?
- Did each of the project teams have the capability to achieve their objective?
- What obstacles would the project teams face? And did the sponsors have the ability to help the project teams mitigate these obstacles?
- Can the sponsors leverage this investment in eight technology based knowledge sharing innovations to provide value to future projects teams? Can they use the experiences of this first cohort of funded projects to give future teams a running start?

From the individual project team's perspective, their questions were more focused to their individual projects and team development:

- Did the project teams, in their specific environment, with their current set of resources, tools, and experience, have what it takes to meet their objectives?
- Did they have the organizational and technical capability to meet their objectives?
- Would the technology work as expected?
- Can they get the partners to work together toward a common goal?
- Would the expected users be able to use the new knowledge sharing system?

Throughout the year-long project all eight of the project teams overcame many challenges to create Webinars, launch new Web sites, and to develop new training materials. The individual teams found they did have what it takes to be successful. Each team achieved their overall objective and successfully created and used technology-based innovations to share knowledge about natural resources management. Along the way they found that many of the obstacles they faced had to do as much with the challenges of multi-organizational, collaborative efforts as it did with limited understanding of the technologies under consideration. They found their success relied as much on their ability to adapt known project management and communication skills to this new environment as it did on their efforts to build understanding about how technology could be leveraged to support the goals of their various partnerships.

For the project sponsors, they also found evidence that their small investments in community-based efforts to employ technologies in new and innovative ways in support of knowledge sharing did make a difference in how information is shared with and used by geographically dispersed and disparate communities. They created a group of colleagues who would now be the first generation resource for grantees of the future.

While the toolkit is specifically directed toward natural resources practitioners in government, academic, and not-for-profit settings, it also provides valuable lessons for any organization involved in community-based collaborative knowledge sharing activities. The insights from the project team

members provide guidance for government and not-for-profit program managers whose responsibilities include the sharing of knowledge among diverse and sometimes geographically dispersed communities. The toolkit is a roadmap of sorts for organizations and individuals who are working in new ways, using new tools and techniques in pursuit of knowledge sharing objectives.

Following this introductory chapter, chapter two presents an overview of the impact of the Electronic Commons Programs. Chapter three provides an overview of the environment the eight project teams worked within and the nature of the challenges stemming from this environment. Chapter four discusses how to reduce the risk of failure in information technology innovations, based on the conference calls with the participants, along with a discussion of the tools used by the project teams. The factors found to be critical to success by the participants in the eight project teams are presented in chapter five in the form of recommendations to project teams, together with vignettes from the projects. Advice to colleagues in the form of tips relative to each factor is also included. Chapter six concludes the toolkit with a set of recommendations to organizations funding similar projects, as well as advice to potential grantees on writing successful grant proposals involving community-based knowledge sharing and technological innovation. The appendices include a number of related resources and detailed information about the projects themselves.

Chapter 2- Assessing impact

A goal of this ninth project was to access the impact of these eight projects to determine if smaller grants to community based organizations would make a difference in the natural resource community. Could this cohort of grantees be used as a resource or model for future grantees based on their experiences and the resources they developed? The critical success factors and the overall impact that each of the projects achieved are a testament to the success of this venture. Not only will this toolkit assist future cohorts as they explore information technology as a means of knowledge sharing, it provides a means to reach out to colleagues who can act as the knowledge base for future endeavors. As one grantee stated, "*I am not used to this type of collaborative environment within a grant structure – normally I am competing with each of you. This has been refreshing to come together and share success stories and challenges so that there is a knowledge sharing among like entities*."

This toolkit sheds light on these questions and others that the team and the sponsors found as they explored this new territory. The results speak for themselves; each of the projects found that although the grants were small, each had a notable impact on the ability of the organization to share knowledge with extended audiences in ways that were previously impossible or too costly to contemplate. They were also able to grow capacity and capability within the teams to explore potentially new opportunities based on these experiences. The following chapter discusses the impact these programs had, not only on their own community, but also on the natural resource community as a whole.

The impact of small grants to community-based organizations

The range and complexity of government IT investments makes assessing their returns a daunting task. Just like each of the project teams, the *Electronic Commons Program* administrators had to determine if in fact this project was money well spent. Was this a good use of the agency's funds? Was there a way to leverage this investment to help spawn new initiatives? Did we create a cohort that could be used as a resource for future grantees?

Creating the framework for assessing these questions is in fact a challenge in and of itself. The measures will need to show an increase in efficiency, increase in effectiveness, an enablement of some kind within the organizations or stakeholders, and intrinsic enhancements. Achievement of each of these measures was seen in the discussion and engagement at the November Reflection Workshop, as well as the final reports from the grantees. Based on the grantees own evaluation of their projects, each of these factors were able to be measured through their program results.

The USDA Forest Service

The Forest Service representatives to the Electronic Commons Project—Al Steele, Physical Scientist with the Northeastern Area, and Don Howlett of the Hiawatha National Forest—report the November Workshop in Albany was a great success. Steele said, "When organizers of Electronic Commons decided to include the post-project meeting, we had a sense it would be valuable to everyone, but we had no idea of how right we were. Not only were lessons learned captured, but there was a huge amount of peer learning that went on during the meeting."

Northeastern Area News Notes
November 2006

Each project team created a different product. For projects whose primary goal was delivery of educational lectures, the impact was relatively clearly defined by the number of people they were able to reach, as well as the extent of the geographic area from which their students originated. As you can see from the examples below, the impact of these types of projects, especially when accounting for the small size of the grant, was significant. With a small investment, the project teams were able to reach hundreds of interested individuals coming from a wide geographic area spanning close to 30 U.S. states. In addition to counting their students, some teams also conducted post-Webinar surveys to gain feedback from their students as to the method of delivery as well as the content of their Webinar.

Measuring impact was more difficult for those projects with a primary goal of creating a Web site to serve as an educational resource. In these projects the typical debate about the value of a "hit count" as an indicator of success took place. Simply counting the number of visitors to the site is not generally seen as a testament to the usefulness of the Web site itself. The *White Tail Deer* project team resolved this issued by conducting an "informal survey" of a number of known experts in white tail deer management field. The experts were asked to evaluate the Web site for content. Of the 195 experts surveyed, 91% stated they would recommend the Web site to their colleagues. Other teams used less formal means that made sense in their context. For example, the *Augusta Springs* project team, who created their Web site to prepare students for their work at August Springs as volunteers, relied on observations from the natural resource educator, who noted that students coming in as volunteers "were better prepared for their roles than before the Web site became available."

Regardless of the measurement approach, each project put forward stories to illustrate the impact that the small grant they received from the USDA Forest Service had on their efforts to share knowledge about natural resources management. Three of these stories from their final reports are presented below.

Cooperative Weed Management Areas

The *Cooperative Weed Management Areas* (CWMA) team held two in-person training sessions that they used to revise existing training materials and compress its 8-hour long session into a 2-hour training session. After revisions and careful feedback from their audience, the team was able to deliver four distance-training sessions to a total of 113 participants in the distance CWMA workshops representing 28 states and the District of Columbia. Many states had several participants, each representing different affiliations (universities, federal agencies, not-for-profits, etc.). In summary, this grant allowed the Midwest Invasive Plant Network to promote the creation of CWMAs throughout the eastern U.S. where several have already started to be organized. According to the team, this project will have ongoing ripple effects as more and more groups working on invasive plant species issues see the effectiveness of these CWMAs and decide to create their own.

Forest Resources and Ecology

The *Electronic Commons Program* grant had a tremendous impact on the students and teachers of the Nicollet Forest Education Network and surrounding communities. All together, 15 different projects involved 788 students in hands-on field days enabling them to learn about their environment through direct experience. Three thousand, one hundred and ninety one students (3,191) participated in the Preparatory Interactive Television (ITV) programming to prepare participating students and teachers for field day experiences. In addition, 1,060 students participated in ITV sharing sessions in which students who participated in the hands-on projects shared their experiences with their peers. One of the groups of students involved was asked to present their project, titled "The Effects of Zebra Mussels on the Water Quality of Lake Metonga" at the Wisconsin Association for Environmental Education Fall Conference. The grant also enabled the building of many valuable partnerships that will ensure that

many of the grant projects continue after the funding ceases. The project has earned strong support of school administrators who amidst budget cuts have committed to continued support of these service learning projects.

Native Plant Restoration

Throughout the grant period, the Stewardship Network hosted ten Web casts focused on native plant restoration. Session topics ranged from logistics of restoration (seed collecting) and invasive plant control to the use of volunteers and equipment sharing programs in restoration. The Webinars were well attended with each attracting anywhere between 60 to 175 individual volunteer and professional land managers across North America. The total number of participants over the past year has reached more than 420, representing 29 states within the United States, 3 provinces of Canada and the state of Veracruz in Mexico. Each Web cast session attracted new participants as well as returning participants. Approximately 65 individuals have participated in more than one Web cast since December 2005.

Chapter 3 - Environmental Complexity

The *Electronic Commons Program* provided grantees with the opportunity to extend the value of their knowledge about natural resources through innovative uses of information technology. Some grantees sought to disseminate information by building Web sites; others by creating new Web-based training resources. Others sought to create new communities of practice through combinations of resources such as interactive Web sites, Webinars, and Web-based training (refer to Table 1). Whether their purpose was to reach new audiences or to disseminate knowledge to known partners in a more cost effective manner, each team explored the promise of the Internet as the knowledge-sharing tool of choice. Along the way each team encountered the well-known challenges of information technology innovation, as well as additional challenges unique to the non-profit environment. These challenges were further complicated by the fact that each team consisted of at least two organizations, often located in geographically distant areas, trying to serve geographically dispersed communities. These additional challenges required each team to establish new ways to collaborate across organizational boundaries and to effectively communicate with partners whose location did not allow frequent face-to-face contact. In the end, a number of the grantees found the logistics of hosting an event (Webinar or Net-meeting) in this new medium to be more of a challenge than engineering the software. Trainers had to be retrained, course materials had to be revamped for the new venue, and participants had to be educated in how to interact with this new media. There were also some surprises along the way. In the case of the *Historic Woods* project, the archived Webinars became an asynchronous training opportunity. However, for another project a switch in the Webinar host resulted in the loss of archived events, an unforeseen consequence. The success of their efforts makes their stories particularly useful for others embarking on similar projects or working within similar environments.

Innovation

An idea or behavior perceived as new to the individual or adopting organization (Rogers, 1972, Kanter, 1983, Damanpour, 1996).

Table 1.
Eight Technology-based Knowledge Sharing Innovations

Project Name	Knowledge Sharing Innovation
www.AugustaSprings.org Department of Forestry, Virginia Tech, Virginia	Interactive Web site to educate visitors of the Augusta Springs center, a U.S. Forest Service wetlands and conservation education center on the North River Ranger District, George Washington National Forest.
Cooperative Weed Management Area (CWMA) Training for Eastern United States The Nature Conservancy, Indiana	Informational and training materials to be used for remote training workshops.
Demonstration of a Community of Practice to Enhance Economic Development Northeast Minnesota (NE MN) Forestry Industry, Minnesota	A community of practice for the Northeastern Minnesota Forest Products Action Team and the regional wood products industry using a variety of means.

Table 1. Eight Technology-based Knowledge Sharing Innovations	
Project Name	**Knowledge Sharing Innovation**
Forest Resources and Ecology: A Distance Education Network Model Chequamegon Nicolet National Forest, Wisconsin	An interactive educational program for school districts to inform teachers, students and parents about the issues facing the Chequamegon Nicolet National Forest.
Native Plants Learning Network: Propagating restoration through technology The Nature Conservancy, Michigan	A multimedia online learning network focused on native plant conservation and restoration.
Promise of Place Interactive Web site Shelburne Farms and Green Mountain National Forest, Vermont	An interactive Web site that provides a forum for Place-Based education models.
Sustaining White-tailed Deer and Forests: An Electronic Resource Center Cooperative Extension, University of Georgia, Georgia	A Web site to carry on informed dialog and develop community-based solutions to the problems of local wildlife.
Web-based Learning and Technology Transfer of Inspection Methods for Historic Wood Structures Natural Resource Research Institute (NRRI), University of Minnesota, Minnesota	A community of practice for the inspection of historic wood structures.

Information technology innovation

Expert observers of Information Technology (IT) trends say organizations waste time, money and credibility on IT because of a few fatal mistakes. Even though studies of IT innovation span the last decade, the challenges still come down to understanding the problem to be solved and choosing the right technology. Many have been blindsided by the "*glitter of all things new*," when in fact the best solution to the problem may not be the technology but an organizational or policy change. Many have tried and many have failed all in the name of innovation.

> *Pick a technology that enhances the course or the material - don't let the technology drive the business or the topic.*
>
> ***Historic Wood***

The eight grantees were no different from other IT innovators. Many found the selection of the technology as challenging as using the technology to conduct their project work. A number of the teams had little if any technology expertise within the team and had to rely on the knowledge and experience of others to guide decision making in these areas. Some project teams were fortunate that their project leads were in fact comfortable with technology. However a majority of the teams were comprised of primarily content experts: people who understood what knowledge needed to be shared with whom and for what purpose. A majority of the teams had in general, limited knowledge about the medium they were relying upon, except as users themselves.

The teams wrestled with questions such as:

- Will it (Web site, Webinar, etc.) work within their environment?
- Are the desired results obtainable with these new mediums?
- Do we have the skill sets necessary to take advantage of these new tools?
- Will the users posses the necessary knowledge to take advantage of their product?

Choosing the right technology is a difficult, and at the same time a crucial process for the success of a project involving the use of IT for knowledge sharing. Selecting the best technology to support the goals of a project while also ensuring the users have the skills and resources necessary to benefit from the system over time is a complicated task, especially for teams with limited knowledge of IT. The teams found enabling their knowledge sharing innovations to be challenging in and of itself, especially within the non-profit environment in which they worked. Couple this with geographically dispersed team members, and the selection and use of technology became even more compounded.

> *When planning a project involving technology, make sure to try it out before committing to it - that's the only way to assure it is the right technology for your project.*
>
> ***Cooperative Weed Management Areas***

Managing organizational change

The grantees set out to achieve very specific and innovative knowledge sharing objectives. Along the way they explored new ideas, methods, and devices for sharing knowledge about natural resources management. Natural resources management and knowledge sharing both have challenges in their own right, however, in each case organizational change had to occur as well for the projects to be successful. Project team members discussed the challenges they faced when the changes required to move a project forward needed to occur outside of their own organization and in that of a partner.

> A **change agent** is someone who engages either deliberately or whose behavior results in social, cultural or behavioral change. *http://en.wikipedia.org/wiki/Change_agent*

Project leaders and often the team members as well acted as change agents. The way the projects themselves were conducted required changes in organizational practices. Working across boundaries to create new resources to create specific shared products was new territory for many. The project teams found their traditional project management tools and techniques had to be applied more rigorously to identify and coordinate the changes necessary across all participating organizations. In addition, they noted the need to more consistently adapt to the dynamic conditions of the collaborative efforts. New strategies for working collaboratively across the various boundaries had to be developed. These "innovations" enabled the teams to focus more on the knowledge sharing innovations and less on the process issues.

Working in a not-for-profit soft-money environment

The project teams identified a number of challenges to their efforts that can be attributed to the nature of the not-for-profit, soft-money environment in which they work. Scarcity of resources, lack of operational funding, and delayed delivery of grant dollars were three of the challenges considered by the project teams to present the most significant challenges.

Securing ongoing funding to create and then support the technical and organizational infrastructure necessary for innovative and effective programs and services was almost a deal breaker. These resources, when they are available, often come with conditions for use including when and how they

can be used. While these conditions are generally well-known among not-for-profit practitioners they often constrain the efforts of newcomers to technology innovation who cannot predict the full range of conditions or expenses they might face in their projects.

Funding organizations have traditionally funded the creation of new resources and programs while relying on the funded organization to secure support for ongoing operations. The catch-22 of this approach is that it creates competing priorities for project teams. The need to divide efforts between working on the project itself and finding more money to sustain the project over time was regularly noted by the teams as an obstacle to progress. This was especially challenging for the smaller organizations or teams where the team leader was also the grant manager. Since funding for ongoing operation of the new programs was not provided, many of the organizations involved had to focus both on creative ways to find monies for operations and creative designs to minimize ongoing operational expenses. These pressures reduced the time available to work on the project itself.

In addition, a number of the teams did not have ready access to the grant funds until well after the official project start date. The project participants considered this as one of the most significant barriers to their efforts.

Working in multi-organizational, geographically dispersed teams

All of the *Electronic Commons Program* projects involved partners from multiple organizations and geographically dispersed locations. These multiple partner, geographically dispersed teams were consistent with the aims of the *Electronic Commons* program officers; to encourage collaborative community-based innovations in knowledge sharing. However, this design introduced new challenges for the project team members, most of whom did not have experience working in this way. Some team members spoke about the difficulty of maintaining the passion and commitment to the project goals without the immediate physical presence of other team members to help carry them through difficult times. As a consequence teams were required to develop new and creative ways to work together. The cost of holding co-located meetings on a regular basis, for example, was prohibitive due to both the cost of travel and to the significant loss of time in the field. Therefore, alternatives had to be found. A number of the teams looked to Web-based meeting software, Webinars, and simple teleconferencing technology as alternatives to same-time, same-place meetings. Meeting software supported traditional "teleconferencing" but also allowed the teams to share documents and other products (such as slide shows, video clips, etc.) real-time during meetings. Others found the functionality of basic telephone-based teleconferencing enough to satisfy their requirements as long as necessary materials were shared in advance of meetings.

Many of the team leaders found themselves having to consider questions not just about the needs and the capabilities of the intended users of the knowledge sharing innovations they were coming together to produce, but also of the team members themselves. A number of the eight project teams found they had to make choices based on the "lowest common denominator." For example, using Web-based meeting software as an alternative to face-to-face meetings made sense for some teams. However, other teams had team members without access to high speed Internet; therefore, these teams had to adjust their communication strategies to simpler methods to ensure all members could participate.

> *It is important for a group to have good functioning dynamics prior to an effort to make the communication electronic. We focused on just a core group of organizations and individuals who for the most part had a long term cooperative relationship. This helped smooth the transition to electronic meetings.*
>
> ***Economic Development***

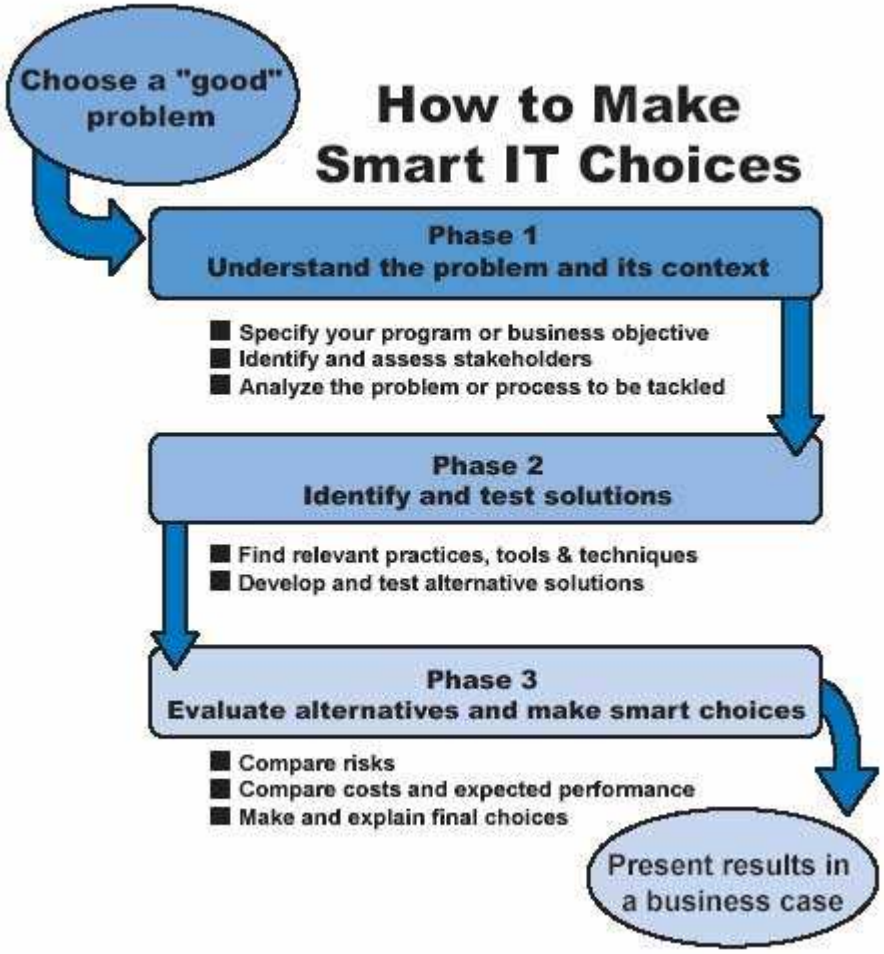
Meeting cost was also a new factor to consider. Calculating the cost of a meeting when working within an organization where team members are co-located traditionally requires consideration of the cost of personnel and opportunity cost of time spent in a meeting. When working with multi-organizational, geographically dispersed teams the cost of meetings must now include the technologies employed to support those meetings, as well as their selection, acquisition, deployment, training, management, and maintenance. These costs can vary with the sophistication of the tools selected. However, throughout this process a number of the teams discovered that while some technologies are more expensive than others, both in purchase price and overhead, they do not always provide additional value beyond the less expensive alternatives. Teams found they needed to consider the task at hand, the technological capabilities of the team (both of the individuals and the organizations that support them), and the associated cost when deciding about the appropriate technology for their meetings. In some cases the teams found that less wasn't necessarily more, but it may have been enough.

In addition to the challenges of communicating between and among team members, teams had to contend with the continual struggle of managing competing priorities. This challenge many times is difficult when teams are co-located, but becomes virtually impossible to manage when teams are geographically dispersed or from multiple organizations. Even with using the various tools discussed previously to maintain cohesion within the team and to ensure ongoing commitment among the geographically dispersed team members, the challenge of managing competing priorities continued to be an issue. During the reflection workshop the participants discussed the challenge of managing multiple competing priorities along with balancing their *Electronic Commons Program* project. As team leaders, they also had to take into consideration the challenges their teammates were facing in addressing their own competing priorities and those of the *Electronic Commons Program*.

Chapter 4 – Reducing the risk of failure

Information technology innovations are high risk undertakings in any environment. Sources of risk include underestimation of the complexity of an innovation and the lack of awareness for the interdependencies of information technology innovations and organizational processes and practices. To increase the likelihood for success of the funded projects, the *Electronic Commons Program* managers sought out resources to assist the project teams in gaining new skills for breaking down these complexities and identifying interdependencies. In particular, they recommended the use of *Making Smart IT Choices*, a publication of the Center for Technology in Government. *Making Smart IT Choices* was developed to provide an analytical and evaluation process for information technology-based innovations in government (see Figure 1). It presents a set of tools and techniques for creating new understandings of a problem to be solved and its context, to assist in the identification and testing of possible solutions to the problem, and to provide frameworks for evaluating the results of those tests against service and performance goals. This chapter introduces the tools from Smart IT and presents some guidance for future project teams in selecting technology tools for project team efforts and to support knowledge sharing goals.

Figure 1. Overview of the analytical and evaluation process



Using the teleconferences, CTG provided the *Electronic Commons* teams with an orientation to *Making Smart IT Choices*. Although each project was different, the project teams encountered similar challenges in identifying the complexity of the environment, accounting for the distributed nature of the work teams and the target users, and the influences of larger organizational and political forces. The specific tools explored during the conference calls and applied by the teams are listed below. The presentation of critical success factors in Chapter 5 provides additional information about how the tools and techniques of Smart IT were applied within the projects.

- **Current/Best Practice Research**
  (http://www.ctg.albany.edu/publications/guides/conducting_best?chapter=1**)**
  An explanation of current and best practice research, how it is done, and why it's important to do.

- **Service Objectives**
  (http://www.ctg.albany.edu/publications/guides/smartit2?chapter=11&section=3)
  A service objective is a structured way to express the goals of your project. The process of creating a commonly understood and agreed upon service objective often reveals differences in thinking, different assumptions, and conflicting perspectives that must all be discussed and resolved before the service objective statement is complete.

- **Strategic Framework**
  (http://www.ctg.albany.edu/publications/guides/smartit2?chapter=11&section=4)
  A strategic framework is a structured way to understand a project proposal by helping you clearly define each key service objective and its customers. The framework then helps you identify the resources, partners, and innovations that might contribute to success. To be most effective, the strategic framework should work with one project-specific objective at a time. Strategic frameworks can be devised by one person and then presented to and reviewed by others, or they can be created through a facilitated group decision conference.

- **Stakeholder Analysis**
  (http://www.ctg.albany.edu/publications/guides/smartit2?chapter=11&section=5)
  (http://www.ctg.albany.edu/publications/guides/smartit2?chapter=11&section=6)
  Stakeholders are individuals and groups who are affected by or have influence over your initiative. Every project needs a careful assessment of stakeholders in order to understand who cares about it, how they can affect it, and how they will be affected by it.

- **Modest/Moderate/Elaborate Framework**
  (http://www.ctg.albany.edu/publications/guides/gateways?chapter=5)
  (http://www.ctg.albany.edu/publications/guides/gateways?chapter=10)
  Allows you to consider various levels of aspiration, meaning that you may be able to design your application to meet the needs of your users from various approaches: *modest, moderate,* or *elaborate*.

Applying Smart IT in selecting collaboration and knowledge sharing tools

Project participants were tasked with making decisions about technologies to support their work as teams and to share knowledge with a target audiences. The first task was necessary because of the multi-organizational make-up and geographically dispersed nature of each team. These characteristics required the teams to identify, select, and implement technologies to support virtual teamwork. The teams used these technologies to address their second task: clarifying the goals of their projects, selecting the best technology to support those goals, and ensuring effective implementation. Insights gained in these efforts were captured and combined with the experiences of CTG to generate guidance for future teams completing similar tasks. Guidance on these two technology selection processes is provided below in the form of a series of questions and related discussions.

Choosing the right tools for teamwork – virtual or otherwise

> *It is important for a group to have good functioning dynamics prior to an effort to make the communication electronic. We focused on just a core group of organizations and individuals who for the most part had a long term cooperative relationship. This helped smooth the transition to electronic meetings.*
>
> ***Economic Development***

Choosing the right technology for collaboration and communication among a newly formed team is an important step in ensuring success of a project. This step becomes even more critical when the team includes individuals who are geographically dispersed and unknown to each other. The following questions and related discussions are provided as a checklist.

- **Is our project team ready for technology-based collaboration?**
  Different technologies may make sense at different stages of projects. For example, in the beginning stages of a project when a team is getting to know one another, face-to-face meetings have been found to be the most productive strategy. Email, for example, while generally recognized as a valuable tool for communicating among a group of geographically dispersed team members, is not generally recommended as the sole communication vehicle for new teams. Tele- and videoconferences provide effective alternatives when face-to-face meetings are not possible in these early stages. As a team moves forward through the stages of a project and creates the culture necessary for virtual team work, more technology-based tools may make sense and provide the team with great flexibility in collaboration.

- **Does our team have a good understanding of the kind of work they will do together?**
  Will the team be focused primarily on discussions and joint decision making? Will document sharing be necessary? Will collaborative writing be necessary? Will teams need to review software options? The selection of the technology tools should match the task at hand. For example, if the work of the team will focus on strategic planning, primarily comprised of discussions, then simple teleconferences might be the most appropriate tool to use. However, if team members will be producing joint documents, then more sophisticated collaboration tools may be necessary. Many of these tools are now available free over the Web, while others are commercial products. The size of the team should be considered here as well. If the team is large, how will they work together? Will subgroups be working on specific tasks? Understanding the nature of the work to be done by the team and the work style of the team is critical to selecting the most useful and usable tool. Selecting a high-end collaboration tool may just cost more money (or frustration) and may not deliver additional value to the team.

- **Do team members already have access to collaboration technologies?**
  Members of your team may already have experience with or have access to collaboration technologies. Use their knowledge and experience to explore what potential tools are available or already in use. Partners from the academic community in particular may have resources already in place to support distance learning and virtual teams. Explore all options.

- **Do team members have access to the selected technology and are they comfortable using it?** Access to collaborative tools is essential for distributed project teams; equally essential is technical and user support. For example, if the tool selected requires access to high speed Internet, make sure your partners have this capability and that they can get support within their organizations to make the necessary connections and to learn how to use it. If access and support resources are limited, it may be necessary to adjust your strategy to ensure all partners can effectively participate, even if it means using a more basic option.

Choosing the right tools to share knowledge

Choosing the right tools to share knowledge requires clear understanding of the purpose of that sharing and the context within which it will occur. Each of the grantees found they needed to focus on clarifying the purpose of the knowledge sharing and to invest in creating a full understanding of the potential users and their capability. Some of the grantees did this by surveying their target users; others used expert advisory committees to provide information on potential users. In some cases the target users were members of the same organizations as project team members; in other cases, target users were students. Regardless, teams found it necessary to invest in understanding the problem and its context before making good technology choices. From the simplest telecommunication conference calling to the more sophisticated voice over Internet protocol (Voice over IP), each technological solution needed to be considered in terms of the role it would play in meeting the project objective. The questions below reflect these insights and are designed to help teams select knowledge sharing technologies.

> *Pick a technology that enhances the course or the material - don't let the technology drive the business or the topic.*
>
> ***Historic Wood***

- **Do we have a well-defined objective and sufficient understanding of the related environment to guide and evaluate technology decision making?** Creating a well-defined objective among a new team can be time consuming. One of the consequences of this is that teams often rush through it and make dangerous assumptions about each person's understanding of the purpose of the project. The team may make other dangerous assumptions related to who already knows what and how easy or difficult something may be to do. Moving forward without testing assumptions and ensuring the objective is collectively understood can be a shortcut to failure. Further, a clear statement of the objective is central to an alternatives analysis.

- **Do we know enough about our users to make good choices?** Knowing your users is key to choosing the correct technology for your project. Knowing when plans will need to be adjusted to ensure that all interested parties can participate, no matter their technological capability, is critical. Sometimes multiple strategies are not possible due to time or financial constraints. If this is the case, then priorities need to be established and used to guide decision making. One team found their users were well-served

> *We had a special needs audience in some of our classrooms. We found that you can't use a hearing aid in an Interactive Television (ITV) classroom because of feedback. The students will actually be in pain. We found that there are adaptive technologies that can be used, but you need to know about it beforehand in order to avoid any problems.*
>
> ***Forest Resource and Ecology***

through basic technologies rather than the prohibitively expensive online training tools. They found that delivering a CD-Rom with a presentation ahead of time and then holding a lecture over a teleconference worked just as well as holding a Webinar.

- **Is the technology available to you and your potential users?**
  Is the technology of choice readily available to users? Although some technologies such as email or teleconferencing are widely available, other technologies are less so. For instance, tools such as Web conferencing or Webinars require access to high speed Internet to be effective. Project teams had to take into consideration the resources available to their audience and adjust their plans, and in some cases their objectives, accordingly. Some of the project teams found cost to be a factor as well and had to limit their choices to those technologies freely available through their partner organizations.

Can we provide support?

New users of knowledge sharing systems require at least two kinds of support. The first has to do with system set-up; the second has to do with the integration of the new system into their work. Each project team had to create a plan for providing technical support to users and a second plan for ensuring the systems were used effectively. In addition, they found they needed contingency plans in place for when programs were conducted and technologies didn't cooperate. In the case of the *Cooperative Weed Management Area* training project, technical support was available during Webinars to assist those having technical difficulties. Prior to the Webinars, support for content development and delivery using the new tools was also available to trainers. This kind of support is necessary as well and not always anticipated.

> *When planning a project involving technology, make sure to try it out before committing to it - that's the only way to assure it is the right technology for your project.*
>
> ***Cooperative Weed***

Chapter 5 - Critical Success Factors

While no project manager can fully reduce the complexity created by the larger environment, the challenges to innovative efforts stemming from that complexity can be mitigated. Throughout the projects each team employed a variety of strategies and techniques to manage these challenges and through these efforts identified a number of factors as critical to their success. Eight factors were identified by the project teams overall as most critical to their success. The importance of each varied depending on the stage of the project as well as the make-up of the project team. In general, the grantees recognized four distinct project stages – the proposal stage, the kick-off stage, the execution stage and the completion stage. In the proposal stage, for instance, many of the grantees talked about the importance of creating a shared vision as well as leveraging existing partnerships and resources. In the execution stage, most stated that strong management techniques and knowledge about technology were key to their success.

Eight recommendations for future efforts

1. Employ a skilled manager using strong project management practices.
2. Create a shared vision of your project.
3. Align purpose with identified needs and capabilities of your stakeholders.
4. Define success in terms of the goal of the project.
5. Leverage existing partnerships and resources.
6. Understand and be comfortable with the technology.
7. Expect change and be flexible.
8. Create a sustainable model.

Each factor is discussed below in the form of a recommendation to future project teams. Brief vignettes from the projects are provided as illustration of how each factor was critical to the efforts of the project teams. Each factor section includes a brief excerpt from a relevant section of CTG's *Making Smart IT Choices*, a toolkit used throughout the conference calls as a resource to help support the teams' work. A set of tips for putting each recommendation into practice is also provided.

Analysis is a group process

Consensus-finding and –building tools are often needed to help a group resolve different views and conflicting objectives or interests. Groups also frequently need to be introduced to models for collaboration, especially if they've never worked together before. Effective teamwork may also involve difficult trade-offs and other choices, so some decision making tools and techniques can be useful. Group processes take skill and time to work effectively but they result in well-documented and well-understood decisions that can then guide the work group to a successful outcome.

Source: Making Smart IT Choices

Employ a skilled manager using strong project management practices

Strong management practices were identified by each of the project teams as key to the success of their projects. One of the most important skills identified by the project teams was the ability of the project lead to foster frequent and effective communication within the team as well as with stakeholders. A variety of communication mechanisms were used to establish and retain contact and to build effective communication mechanisms. The mechanisms used within the project teams varied based on the nature of the team and the stage of the project. Each project includes some face-to-face meetings, as well as teleconferences and Internet tools such as Web-sharing software to communicate. Communication with stakeholders was designed to maintain their support and involvement and included regular project updates and occasional contact to verify continued interest and to explore changes in needs and priorities. The capability of the project lead to identify and manage issues related to varying levels of access to and experience with the use of alternative communication technologies to overcome distance issues was critical.

Another management skill mentioned frequently was the ability to establish a clear assignment of roles and responsibilities within each project team. It was considered especially critical by those teams where roles changed depending on the phase of the project and individual specialties. These fluctuations did not affect the project as long as each change was clearly communicated to the entire team. Issues arose when there were overall unclear goals, roles and responsibilities; especially at critical transitions in the project when technology choices had to be made.

Employ project management techniques proven to work with multi-partner projects

Based on previous experiences with managing multi-partner projects, the project lead knew the value of project management techniques such as project proposals, regularly scheduled meetings, meeting agendas, or monthly status reports to stakeholders. Her relentless efforts to keep all stakeholders engaged and informed of project progress were key in retaining project sponsorship when executive leadership changed and new competing priorities emerged. Detailed project proposal and status reports helped with recruitment of new teachers and forest service personnel after unexpected departures of project partners. Flexibility in adjusting to stakeholder expectations and needs were key to ensuring their participation.

Forest Resources

The ability to maintain focus and energy among team members who are geographically dispersed was also noted as an important attribute of many of the project leads. Although commitment and level of excitement for a project is frequently based on a personal interest, even the most committed team members faced challenges staying engaged with local competing priorities demanding their attention. Practices considered routine, such as detailed documentation, scheduling, planning, and agenda setting, were found to be especially important in keeping team members from multiple organizations engaged. One team leader noted the importance of the team leader but also of the team members: *"You need to be patient, passionate, persistent, and committed not only as a project lead, but also as a team member."*

Group Facilitation

Government IT projects typically involve dozens of people making hundreds of decisions. People with vastly different work styles, backgrounds, and talents are often brought together, asked to form cohesive groups and charged with solving problems. But people's differences and group dynamics can make it difficult for the group to fulfill its mission. That is why a skilled facilitator can be helpful in leading a group through the necessary steps to make effective decisions.

Source: Making Smart IT Choices

Tips

- Be diligent in planning meetings in a virtual environment. Explore alternatives for integrating traditional tools and techniques into a virtual meeting environment as necessary. For example, typical visual cues that often communicate points of agreement or disagreement, and sometimes that a topic has run its course, don't work in a virtual environment.
- Select a communication tool appropriate to the task, the length of time required to complete the task, and the people participating.
- Be aware of the limitations of the communications tools selected by the team and the abilities of team members to communicate effectively using those tools.
- Use traditional tools and techniques of project management, such as monthly status reports, timelines, task plans, meeting agendas, and others - as long as they don't become a barrier to communication or to the work.
- Share detailed agendas with meeting members ahead of time to specify topics to be discussed and the decisions that must be made.
- Recognize that frequency of contact may vary depending on the phase of the project – at critical points meetings may need to be more frequent and inclusive, while at less critical points frequent and all-inclusive meetings may be counterproductive.

Create and regularly revisit a shared vision statement

Creating a shared vision among members of the project team contributed to the success of the Native Plants project. The process of creating a shared vision started with the initial project design plans and continued as the team wrestled with narrowing down specific objectives. Although the design stage took longer than previously expected, the vision creation process is recognized as helping the team expedite the planning process. Further, the shared vision was considered instrumental in facilitating the successful transition to a new project lead, which occurred mid-project when the original lead departed due to a promotion.

Native Plants

Create a shared statement of purpose

The eight teams were successful because they went beyond shared interest in issues to creating an explicit shared vision for a specific outcome. The investments they made in creating a shared vision turned out in most cases to generate new relationships and attitudes about working together and opened communication among potential partners. According to the grantees, projects with an explicit and clear project purpose and a focused set of goals were easier to manage. In particular, participants noted that a shared vision effectively communicated to all members of the team and reinforced throughout the project helped them maintain the interest and focus of the project team. *Native Plants* found the group process of shared vision formation allowed for the creation of trust in the lead collaborators; through this process they demonstrated openness to the ideas of all partners.

Creating a shared vision within a geographically dispersed, multi-organizational team posed several challenges to the eight project teams. For example, *Promise of Place* noted the challenge of getting people who are not physically located in the same building to take the time to go through the process of creating a common vision, while *Economic Development* noted the challenge of finding common ground among the many partners with varied interests involved in the project. In general the grantees found that, while the team leader played a critical role in the vision creation process, - those projects where the leader saw his or her role as a facilitating the development of a shared vision rather than as the one responsible for developing the project vision by themselves were more effective. The participants noted that autocratic leadership, when exhibited, whether by the project lead or others, was a barrier to the vision creation process, as well as in other activities throughout the projects.

Visioning

Visioning is a tool you use to establish an image of what you want your organization or project to look like in the future. The time frame associated with the vision depends on the needs of the group and may range from months to years.

Source: Making Smart IT Choices

Tips

- Build consensus among your project team on the project vision – do not assume everyone is thinking the same thing. Use exercises or facilitated sessions to explore perspectives and to work toward a shared vision. A variety of tools and techniques can be employed in this task.
- Building a shared vision takes time. Visions evolve as participants become more familiar with the general ideas and issues under discussion and more comfortable with each other. Allow enough time for this evolution to take place and encourage it.
- Select communication strategies that support the collaborative development of a vision statement. Often face-to-face contact is necessary in early vision creation meetings, with more virtual meetings possible as the group becomes more comfortable with the task and each other.
- Maintain open communication ensuring all participants are able to share their perspectives and ideas freely.

Align purpose with identified needs and capabilities of your stakeholders

The grantees regularly emphasized the importance of making sure the purpose and goals of their projects were closely aligned with the needs of their stakeholders. They appreciated the statement of one of their colleagues, *"if you build it…well, they might not come after all"* and regularly invested in understanding their stakeholders. They saw this as a two step process – first, the teams worked to reach consensus concerning project purpose and goals, and second, they worked to ensure the product would in fact meet the needs of their target audience. In addition to identifying the specific needs of their target community, the project teams also had to pay attention to the technological limitations they were likely to encounter in those communities.

A key component of this process for the eight projects was defining their stakeholders and constituents. The eight projects were originally proposed with broad objectives. As the project teams began working they realized they needed to narrow their perspectives and establish alignment between the purpose of the project and the needs and technological capabilities of a specific set of stakeholders. As one grantee stated, "*You need a reason to create whatever it is you are creating – in order to do that, you have to know your stakeholders and what their needs are."*

Identify key stakeholders – and listen to what they say

The original vision of the White-tail Deer team was to create a Web-based database of information on controlling the population of white-tail deer in various regions of the country in the interest of improving overall forest quality. However, through discussions with potential users prior to the design of the Web site, they realized their original vision would not fulfill the needs of all their stakeholders. Namely, they did not account for the various interests of conservationist, hunters, farmers and others whose lives and livelihoods were touched by this issue. After analyzing the feedback received from their information-gathering sessions, they changed the focus of the Web site to providing information to all interested parties on how to ensure healthy deer herds with emphasis on a symbiotic relationship between the forest and the deer.

Sustaining White-Tail Deer & Forest

For instance, the project manager for the *Forest Resource and Technology* project personally knew the teachers and schools with whom she was working. She knew their technological capabilities and limitations and made sure their concerns were addressed with training prior to the beginning of the projects. The *Cooperative Weed* team on the other hand had less direct knowledge of the capabilities of their stakeholders and relatively little experience in using the specific technologies. Therefore, they had little ability to even assess the limitations of the potential participants against some standard or experienced-based understanding of the technology – they had to learn "as they went." By conducting several preliminary training sessions using their Web-based tools they found that some of the participants faced unexpected technological limitations. Identifying these limitations resulted in the development of an alternative training strategy for future participants facing similar conditions. In both of these cases the grantees aligned their purpose with a select set of needs that were not being met while paying attention to the technological capabilities of their audience.

Stakeholder Analysis

Stakeholders are individuals and groups who are affected by or have influence over your initiative. Every project needs a careful assessment of stakeholders in order to understand who cares about it, how they can affect it, and how they will be impacted by it. Stakeholder analyses are structured examinations of the relationships between a proposed project and key players in the environment.

Source: Making Smart IT Choices

Tips

- Identify primary stakeholders and their needs.
- Conduct a careful and detailed stakeholder analysis prior to and during the project development phase. Be sure to communicate often to key stakeholders to keep them engaged in the process.
- Continue to review the project goals and to ensure they continue to fulfill the identified, but typically dynamic needs of the stakeholders.

Define success in terms of the goal

Focus on the goal, not the technology

The goal of the Augusta Springs project was to help students of all ages learn about the role that forests play, particularly the National Forests, in protecting clean water. With the number of visitors to Augusta Springs increasing each year and the resources of the forest service being stretched thin, the Augusta Springs project team wanted to design a Web site that would help train student volunteers and free up time of the Forest's environmental educator to concentrate on developing new educational opportunities. Despite difficulties with shifting personnel and priorities, and by resisting the temptation to get carried away with technology this project always kept its sights on its initial goal. In the end, they produced an informative Web site that is easily accessed and updated by its users and promises to serve that audience for years to come. The Web site itself never became the focus; it was always the Web site as a tool to meet the primary goal - preparing student volunteers.

Augusta Spring

A common mistake made by novice and experienced project teams is to define success in terms of the creation of a new resource such as a Web site or a new database. They focus on the process of building the "thing" and fall often into trap that once available – the resource will certainly deliver the expected benefit. Research on information technology innovations shows this is often not the case. Solely focusing on the specific resource as the objective is particularly problematic when issues arise in the creation of that specific thing. If the focus is on an overall outcome – then the strategy for achieving that outcome can change depending on unexpected conditions.

Several of the *Electronic Commons Program* proposals contained project purpose statements presented in terms of the resource being produced – the system, the Web site, the training materials-rather than on the impact the new resource would have on its intended audience or user. Through guidance provided in the teleconference calls with CTG and the use of CTG's toolkit, *Marking Smart IT Choices,* many of the grantees began to understand the need to shift their perspective from the "thing"

to "what the thing would do and for whom." In particular they used the service objective statement to separate out the thing they would be building from the action that users would be able to take as a result and the outcomes they expected would be realized. Once they did this it became easier for the grantees to define measures they could use to determine whether their project was creating the expected benefit.

Using the service objective statement the teams were able to emphasize the importance of first defining what role this new product would play in the user community and only then choosing a suitable technological solution. Gaining knowledge of the end-user and how the final product would be used by them became a pivotal point for many of the grantees. This allowed the discussion to turn from the technology to the purpose of the project such as dissemination of information or building a community of practice. Once this occurred creating a meaningful evaluation plan that allowed the teams to track their progress became easier.

Service Objective

A service objective is a structured way to express the goals of your project. The process of creating a commonly understood and agreed upon service objective often reveals differences in thinking, different assumptions, and conflicting perspectives that all must be discussed and resolved before the service objective statement is complete.

To provide (who) with (what) that allows them to (action) so that (outcomes).

Source: Making Smart IT Choices

Tips

- As a team, develop a clear description of the intended value of the end product; be explicit about who it will serve, how it will help or support those users and what the outcomes will be from its use.
- Set realistic expectations from the start.
- Conduct current and best practices reviews of projects with related goals to learn from the experience of others.
- Consider including prototyping or benchmarking as a part of the project plan to help evaluate the impact on users and other stakeholders.
- Create an evaluation plan as an integral part of the overall design and project scope.

Leverage existing partnerships and resources

As described in the previous chapter, scarce resources and the geographical distance separating project team members presented challenges to the eight teams. However, the grantees found leveraging existing partnerships and existing resources helped them overcome many of the obstacles created by these conditions. Participants talked about how they drew on their past partnerships to identify and acquire resources, to share experiences and to connect with new partners. Working with known partners allowed the trust already established in previous projects to be leveraged for these new knowledge sharing efforts.

One of the first tasks of all the team members in each project was reaching out to current collaborators. The second was to use these networks to both explore potential interest in the new effort and to use these existing networks of contacts to connect with other unknown potential collaborators. Many of the teams crossed organizational and professional boundaries reaching beyond the natural-resource field to Web-design and marketing professionals, system developers, as well as academics to help bring in subject matter expertise to fill gaps in their existing teams. Others used existing partnerships for disseminating information about their projects to the wider community of natural-resource organizations and school districts. Many found that new partners could be brought in to provide a specific knowledge or skill that would be relevant during a particular stage of the project or to complete a specific task. Understanding that not all partners need to be connected to the project and involved in the same way allowed the project lead and core participants to bring in those less interested in or available for the overall project but interested in and capable of participating in a specific, and often critical activity. For example, a number of the teams drew on technical skills available in local universities. These individuals did not need to hire a full participant to provide a valuable resource to the projects in terms of very specific tasks such as data base design and Web site development.

Engage past partners and seek new ones

Engaging existing partners in the development of their Web site was very important for the team from Shelburne Farms. The field of place-based education is relatively new and in order to ensure comprehensiveness of their material, the team needed to engage various partners from the governmental, non-profit and private sector. These partnerships provided the opportunity to gain important feedback on the design of the Web site, to engage others in populating the Web site's content, and to find new partners. Leveraging existing partnerships meant not only reaching out to past collaborators to work on new projects, but also to leverage new contacts to achieve project goals.

Promise of Place

Another benefit of leveraging existing relationships according to the grantees was the opportunity provided to leverage the small amount of resources available by bringing in more partners willing to invest in the effort – some with money, but most with time and energy to work on some aspect of the project. In other cases existing connections provided opportunity for taking advantage of purchased software licenses in partner organizations. Several of the teams were able to take advantage of existing software already purchased by their partners or their home institution, enabling them to use this technology at no cost. Others found that existing course work or curricula used in other parts of the country could be adapted to reduce the costs of new curriculum development. Leveraging existing resources was found by the grantees to be especially important in those cases where there was a time lag between the desired start of the project and arrival of grant funds. Leveraging existing resources helped the teams conserve scarce resources and allowed them to concentrate on areas that were novel or needed extra attention. Some of the teams were in the unique position of having available resources that could be used in the short term to start working on their projects prior to when the grant monies were available.

Don't reinvent the wheel

The Cooperative Weed Management Areas (CWMA) team started their project by drawing on a workshop model and cookbook used successfully in the western CWMAs as a blueprint, thus considerably decreasing the cost of developing completely new curriculum. The team customized the western format and text to better address the issues faced in the eastern states. They then piloted the workshop and cookbook in four trial training sessions. The feedback they received from this 'in-person' training was then used to fine tune the material before broadcasting the training in a distance environment. The team found this iterative process to be very successful not only to work out the mechanics of the course but also as a way to introduce the material to new instructors who may not be familiar with the distance training environment.

Cooperative Weed Management Areas

Strategic Framework

A strategic framework is a structured way to understand a project proposal by helping you clearly define each key service objective and its customers. The framework then helps you identify the resources, partners, and innovations that might contribute to success. To be most effective, the strategic framework should refer to one project-specific objective at a time. Strategic frameworks can be devised by one person and then presented to and reviewed by others, or they can be created through a facilitated group decision conference.

Source: Making Smart IT Choices

Tips

- Use existing relationships with others as potential resources for the team.
- Create a "snowball effect" by asking your contacts to use their contacts and so on.
- Reach out to others in the not-for-profit world (universities, colleges, etc.) and across your communities of practice to explore creating cooperative agreements that will provide you access to technology or other resources at no or reduced cost.
- Reach out to partners who may have the funding flexibility to allow for preliminary work to begin prior to the availability of the grant funds.
- Consider your project from a holistic perspective by using such tools as the Making Smart IT Choices Strategic Framework. This tool helps you place your project into the larger context of customers, resources, and innovations.

Understand and be comfortable with the technology

Many of the grantees had previous experience using the technology of interest in their projects. However, overall they had limited experience employing the tool to meet their own knowledge sharing program objectives. This new use presented a challenge for all of the teams. According to the participants, they found they had to think in new ways and plan differently. Because of limited funding and limited access to expertise, many of the project teams had to select the software/technology that was most readily available and affordable. In a majority of the projects, this turned out to be okay, as their needs were straightforward. However, in some cases, as the teams began to work with their new systems and discovered limitations with the tools, they had to look for other options.

Understand the changes in process introduced by technology

Although the project lead and his partners had experience delivering seminars and lectures in person, when they decided to venture into the world of Webinars, they realized they would need to adjust their delivery techniques. The use of Webinars meant they would lose face-to-face contact. They would lose the ability to read audience reaction and not be able to feed off other people's energy. The project lead knew in order for the Webinars to deliver the intended value he would have to make sure his use of the technology was seamless. The presenters made sure they were not only familiar with the operation of the technology and were comfortable using it, but that they were also able to troubleshoot minor problems and provide rudimentary assistance to their students.

Historic Woods

In one project the collaborators were experienced trainers in their individual areas. What was new to them was the concept of distance training via technology without face-to-face contact with their audience. To reduce the anxiety associated with this new approach and to become familiar with the technology, they held several live training workshops. These sessions allowed them to gain familiarity with the tools but also to gather feedback on their training materials enabling them to tailor it for "virtual" training. They then conducted their first remote training session with a select group of participants to ensure the "kinks" were worked out before moving on to a wider audience. The grantees also found they needed to spend a certain percentage of their time experimenting with the chosen technology prior to going live to ensure that they were comfortable with using the medium and that they were able to provide a certain degree of technical assistance to its users to prevent frustration on their user's part. They discovered they needed to be more than users, but implementers, trainers, and troubleshooters as well.

Technology Awareness Reviews

Technology awareness activities help to identify what technologies make sense to use given a specific problem. These activities are used to educate people about the capabilities of the technology so they can begin to think creatively about transforming the way the agency operates. Becoming aware of the capabilities of specific technologies helps to inform analysis of alternative solutions and helps narrow investment choices to those that will work best for your organization

Source: Making Smart IT Choices

Focus on the goal – be flexible with everything else

When originally planning, the Cooperative Weed Management Areas team assumed they would be able to use the interactive learning management system licensed to a University partner to deliver training sessions. However, after developing the project plan and reviewing the software available at the University, they realized that the software, while free, introduced limitations on the ability of the team to deliver training as originally planned. The original goal was to deliver training to people in or as close to their home facilities as possible. The software available through the university required that participants would have to travel to specially equipped university extension facilities to participate in training sessions. This not only defeated the goal of eliminating travel but would also limit the geographic reach to a very small segment of their intended audience. Because the project team decided to evaluate the selected technology early on in the project and because they had a clear project purpose in mind, they were able to correct mid-course and select another Web-based technology that met their needs.

Cooperative Weed Management Areas

Tips

- Familiarize yourself with the various types of technology available to you. If there is no one on your team, then reach out to others to help.
- Conduct current practice research and technology awareness reviews to assess whether the technology you plan on using has been used in similar projects before.
- Expose yourself to the technology being used prior to the beginning of the project, whether as an observer or active participant.
- Have an experienced information technology person as part of your team. If your organization does not have an IT person, look toward your partners or local academic institutions for possible resources.
- Practice with the new system – technology and work practices - prior to going "live." Consider prototypes, dry-runs and benchmarks as a way to test if the technology will work for your application. Assume you won't get it right the first time and that you will need to design and redesign a few times before getting it "right."

Expect change and be flexible

Each of the project teams acknowledged that change was inevitable. As one grantee stated, "*The one thing you can count on in a project is change*." Whether because of technological problems, personnel issues, or changing needs of stakeholders, the ability of the project lead to assess these events and to make adjustments as necessary was found to be vital to the success of each project. A number of participants noted the importance of open communication among team members and with stakeholders to effectively assess project goals, timetables and stakeholders. They also noted the value of having the service objective statement as well as an understanding of stakeholder needs as a way to inform discussions about changes in the environment and in resources available to the project.

Tips

- "Plan the work and work the plan." Recognize that change is inevitable. Be open to the likelihood that the conditions within which the project is being carried out will change and the project plan will have to change as well.
- Look for opportunities for positive change – sometimes unexpected changes create negative consequences, however, sometimes they are positive. Keep an eye out for those opportunities.

- Continuously assess the project environment and progress regularly and make adjustments as needed.

Environmental Scanning

Organizations use environmental scanning to monitor important events in their surrounding environment. It is a way to answer the questions, "What's happening in my environment that will affect my future?" Scanning involves identifying the issues and trends that have important implications for the future. Scanning includes analysis of the information about these issues and trends to assess their importance and determine their implications for planning and strategic decision making in your project.

Source: Making Smart IT Choices

Create a sustainable model

Creating a sustainable model had two aspects, according to the project teams. The first was to design a resource that was in and of itself sustainable, and the second was to create capability within the necessary organizations to ensure ongoing investment in and support of the new resource.

Creating a sustainable resource required that core project team members as well as partners in the project understood the goals of the project and the needs and capabilities of users. It was also critical to have an understanding of those with a stake in the success of the project. *Making Smart IT Choices* provided tools and techniques to build this understanding. In particular, building a model of the solutions allowed project teams to understand fully what would be necessary to sustain the new resources into the future.

Invest in sustainability from the beginning

Planning for the future beyond the duration of this grant was very important to the Shelburne Farms team as they realized the potential value of the Web site being built. To ensure that this resource would remain accessible in the future, the organization decided to include it as a regular budget item; thus making sure that funding would be available for continuous maintenance. Consideration of the project's future also drove a decision to delay the design of the Web site until the hiring of an IT manager for Shelburne Farms. Although it slightly delayed the project plan, the project lead knew that having input from the person responsible for managing the Web site in the long run was invaluable and potentially crucial for the Web site's continued existence.

Promise of Place

Many of the grantees found that planning for the long term was the most important thing they did in their project. It was also one of the most significant challenges for many of the eight projects as securing funding for maintenance of an ongoing project is more difficult than finding seed money for new projects.

One suggestion from the *Augusta Springs* team was to keep the core team connected and involved, even after launch of the knowledge-sharing system. Seek their input on ongoing questions of resources for maintenance and more importantly for enhancement. If there is interest in continued expansion of the program, there will be a specific interest in sustainability of the infrastructure. Another suggestion was to learn how to reassess priorities among specific modules or programs. If one piece of the

program does not seem to connect with users anymore, remove it, and use those assets to create new resources.

Models of Solutions

When the stakes are high and uncertainties are great, it pays to build a model of your idea and test it in any and every way to you can. By modeling a process, a system, or a program before it is designed and implement, you can more clearly think through how it will impact overall organizational processes and performance. When the idea works in the modeling state you can be more confident that it will succeed in real operation. That is why building models and testing them thoroughly before getting to the final design and implementation phase is an effective way to hold down development costs and minimize risks.

Source: Making Smart IT Choices

Tips

- Assess the alignment of project goals and potential value of the project to involved organizations to determine whether continuous financing can be argued to be in the organizations' interest.
- Make the project future part of the initial planning stages.
- Develop detailed and concrete evaluation techniques to capture the overall value to the public and use this value data to argue for ongoing funding.
- Make information on the impact of your efforts on the wider community available to decision makers and partners as evidence of the value created through the project. This may support efforts to secure additional funding.
- Consider ways to create sustainability in the project plan by finding additional partners who may be better equipped and, in some cases, more appropriate to support the new resources in the long term once it has been developed.

Chapter 6 - Advice

Advice to funding organizations

The not-for-profit environment is often limited by financial resources. This reality, combined with the importance of using resources most efficiently, should encourage funding organizations whose goal is promoting knowledge sharing and education to adjust their granting opportunities to enable organizations to maximize their outreach while minimizing their costs. Given the ubiquitous nature of the internet and the ever-growing list of available IT solutions, investment in technical innovation should become one of the main priorities for funding organizations interested in promoting education among a wider audience. However, as mentioned in previous chapters, technical innovation is a difficult process involving not only issues surrounding technology itself, but also changes in work processes, work organization and others. Throughout our discussions with all of the eight project teams they mentioned several issues involving the grant structure that they found helpful or harmful to their projects. In this section we briefly touch upon some of these issues.

Bring grantees together early in the grant period to facilitate knowledge sharing and community building

One of the aspects of the grant opportunity the grantees found to be among the most helpful was the unprecedented information exchange facilitated by their ability to meet with their co-grantees at the November workshop. This meeting gave all those who attended an excellent opportunity to network with other colleagues and share ideas and resources used in each individual project. As one participant at the workshop stated, "*I am not used to this type of collaborative environment within a grant structure – normally I am competing with each of you. This has been refreshing to come together and share success stories and challenges so that there is a knowledge sharing among like entities*." Many of the grantees felt their projects could have benefited greatly from an earlier meeting, when input from other organizations undertaking similar projects would be very valuable. All felt strongly that the exploratory nature of this type of work was very important and should not be treated like other grant programs.

Provide ongoing substantive support for project teams

Many participants also spoke of the importance of the guided discussions held in the teleconference calls. They found the discussions to be instrumental in some cases and at the very least very valuable to their efforts to achieve their project objectives. Participants strongly urged funding organizations to design similar support in future exploratory grant opportunities as a way to encourage networking and collaboration among grantees. The process of talking through the issues, many of them unfamiliar to members of the project teams, provided a unique opportunity to bring in expertise for short periods of time to assist in brainstorming, problem solving and course corrections.

Having the representatives from the funding organizations themselves on the calls was also valuable to the grantees as it gave them an opportunity to share some of the problems connected to the grant administration itself and explain in more detail the progress of their projects.

Get grant money into the hands of grantees quickly
One of the often mentioned complaints related to the grant structure was the delay in getting the funds to the project teams. The nature of this project required that a lot of resources be extended at the beginning of the project in exploring the various technical solutions available. Although most projects were able to overcome the delay by using resources from other sources, the need to search for these new resources was detrimental to their ability to concentrate on the project itself. In addition, in exploratory projects one often faces unforeseen challenges that require prompt access to financial resources to enable the project lead to manage the unexpected.

Advice to future project leaders

When writing a grant proposal involving technical innovation and multi-organizational team dispersed over wide geographic area, one should pay attention to several issues that speak to the team's ability to successfully complete the proposed project. One of the issues is communication. When working in a multi-organizational team, it is important to describe your communication plan, including the medium and proposed frequency of contact, which should be dictated by the phase of the project as well as the familiarity of the team with each other. If the team consists mainly of new partners, the writer should also illustrate how they plan to create an environment conducive to productive partnership.

The second issue of interest to funding organizations is how their grant dollars will complement existing resources of an organization. In other words, is the team planning on extending the funds by using existing resources and have they planned on using existing partnership to minimize the cost of the project while maximizing its effect. This is important in particular in terms of long term maintenance of the new resources. Logically, funding organizations are interested in funding initiatives that are sustainable. Therefore, while not always possible, it is important to speak to how the new resources will be maintained after the grant period.

The third issue one should pay attention to in the development of a grant proposal for a technology-based knowledge sharing innovation is the technology itself. Participants noted that they would have benefited in the long run in they had addressed more fully in their proposals the topic of technology selection. In particular, it would have forced them to more fully think through the process and, more importantly, the criteria they would use to select the most appropriate technology, and further who would be assisting the team in the selection process.

Drawing on their experiences in the *Electronic Commons Program* and based on discussion at the reflection workshop, project participants identified the following thirteen questions as a guide for their colleagues as they engage in similar proposal writing efforts. The questions guide future teams to create clarity both in their own thinking about the challenges of technology-based innovations in knowledge sharing with teams drawn from multiple, geographically dispersed organizations and to encourage the clear and effective communication of strategies about meeting these challenges in proposals to funding organizations.

- Have we discussed in our proposal how we will handle communication and team development across geographically dispersed areas? Have we outlined our meeting strategies and the consequences of those choices?
- Have we clearly communicated how we will use technology to manage the dispersed project team and that we have the capability to use the technology in this way?
- Have we clearly shown the existence of and success of previous collaborative efforts among team members?
- In those cases where no previous relationships exist, did we clearly communicate how those new relationships will be facilitated and nurtured?
- Have we shown the level of understanding that already exists regarding the needs of the selected end-users of their project? Have we shown that we have knowledge of the extent to which users are equipped to take advantage of the new resources and the plans we have to bridge the gaps that exist (i.e. access to the Internet)?
- Does the project proposal speak effectively to how we will leverage existing resources and partnerships?
- Have we effectively demonstrated our willingness and capability to enter into a collaborative engagement?
- Have we outlined how we will or did establish a shared vision? Have we articulated it in the proposal?
- Have we discussed how we will evaluate our progress against our vision throughout the project?
- Have we included performance measures?
- Have we effectively shown how we will provide technology expertise either through our own resources or through a partner?
- Have we outlined a strategy for sustaining the resulting program over time?
- Have we effectively communicated the commitment of the sponsorship of the project during all phases and in the long term?

APPENDICES

APPENDIX A: Project Descriptions

Table A Wood Education and Resource Center, USDA Electronic Commons Program Project Descriptions.			
Primary agency	**Primary contact**	**Brief project summary**	**Topic** **Target Audience** **Delivery Mechanism**
Virginia Polytechnic Institute and State University Department of Forestry	Dr. Jeff Kirwan 540-231-7265 jkirwan@vt.edu	**www.AugustaSprings.org** The objective of this project was to develop an interactive Web site to educate visitors of the Augusta Springs center. The Web site is meant to facilitate on-line scheduling and communication with local school groups and enable school groups to prepare volunteers who lead groups through the center. The site also allows approved users (educators, teachers, etc.) to add their own content to share through this Web site.	Wetland conservation K-12 Web site
The Nature Conservancy, Indiana	Katherine Howe 317 951 8818 khowe@tnc.org	**Cooperative Weed Management Area (CWMA) Training for Eastern United States** The objective of this project was to develop informational and training materials to be used for remote CWMA training workshops in Eastern US	Invasive Plant Management

Table A Wood Education and Resource Center, USDA Electronic Commons Program Project Descriptions.			
Primary agency	**Primary contact**	**Brief project summary**	**Topic** **Target Audience** **Delivery Mechanism**
	Ms. Ellen Jacquart ejacquart@tnc.org	through two on-line training sessions and one teleconference.	Practitioners • In class training workshops • On – line training sessions • teleconferences
Northeast Minnesota Forestry Industry	Brian Brashaw 218-720-4248 bbrashaw@nrri.umn.edu	**Demonstration of a Community of Practice to Enhance Economic Development** The objective of this project was to develop a community of practice for the	Economic development of wood product industry Practitioners

Table A Wood Education and Resource Center, USDA Electronic Commons Program Project Descriptions.			
Primary agency	**Primary contact**	**Brief project summary**	**Topic** **Target Audience** **Delivery Mechanism**
		NE MN Forest Products Action Team and the regional wood products industry using Web-pages, on-line plant visit reporting forms, Web-based seminars, chat rooms, e-newsletters, and archives as tools to accomplish sustainable economic development of the wood products industry in NE MN.	• Webinars • Meeting software
Chequamegon-Nicolet National Forest, Wisconsin	Michele Nickels 715 365 4685 mwangeli@nicoletcollege.edu	**Forest Resources and Ecology: A Distance Education Network Model** The primary objective of this project was to develop an interactive educational program using the Interactive Television (ITV) technology for seven Nicolet Distance Education Network (NDEN) school districts to inform teachers, students and parents about the issues facing the Chequamegon-Nicolet National Forest. The goal was to prepare students and teachers for hands-on conservation education projects by developing their skills to address forest issues and enabling them to share their knowledge and lessons learned through ITV and NDEN Web site.	Conservation Education K-12 ITV
The Nature Conservancy, Michigan	Randy Swaty 906 225 0399 rswaty@tnc.org Lisa Niemi	**Native Plants Learning Network: Propagating restoration through technology** The objective of this project was to develop a multimedia online learning network focused on native plant conservation and restoration. The goal was to	Native plants Practitioners

Table A Wood Education and Resource Center, USDA Electronic Commons Program Project Descriptions.			
Primary agency	**Primary contact**	**Brief project summary**	**Topic** **Target Audience** **Delivery Mechanism**
	Stewardship Network lniemi@tnc.org	maximize relevant information sharing while minimizing time and travel by using interactive information technology such as video-conferences, Web sites and Web chats	• Webinar • Video Conference • Web site
Shelburne Farms and Green Mountain National Forest	Megan Camp 802 985 8686 mcamp@shelburnefarms.org Ms. Kathleen Diehl Public Affairs Officer Green Mountain National Forest kdiehl@fs.fed.us	**Promise of Place Interactive Web site** The objective of this project was to develop an interactive Web site, Promise of Place, to serve as a forum for sharing curriculum, best practices and other information regarding place-based education models that address natural resource related issues in the northeast.	Natural resources and conservation K-12 and educational community based programs Web site
University of Georgia Cooperative	Dr. William Hubbard 706 542 7813 whubbard@uga.edu	**Sustaining White-tailed Deer and Forests: An Electronic Resource Center** A year-long effort to develop and market a single web site that would help	Population Control of White-Tail

Table A
Wood Education and Resource Center, USDA
Electronic Commons Program
Project Descriptions.

Primary agency	Primary contact	Brief project summary	Topic Target Audience Delivery Mechanism
Extension	Mr. Matthew Howell IT Senior Manager mhowell@sref.info Ms. Laurie Schoonhoven lms28@psu.edu	communities around national forests facing deer overabundance to carry on informed dialog and develop solutions.	Practitioners Web site
University of Minnesota Natural Resource Research Institute	Brian Brashaw 218-720-4248 bbrashaw@nrri.umn.edu	**Web-based Learning and Technology Transfer of Inspection Methods for Historic Wood Structures** The objective of this project was to develop a community of practice for the historic inspection of wood structures using Web pages, Web-based seminars, video-streaming, chat rooms, e-newsletters, a marketplace and archives to provide direct assistance to owners of historic wood structures enabling better inspections, maintenance and safety of these structures. As a subset of this project, the project team conducted a Webinar for the City of New Orleans after hurricane Katrina. The City of New Orleans contacted Forest Products Laboratory (FPL) and NRRI for information that could be used to train building inspectors about the specific problems associated with flooded wood-frame homes and other buildings. The FPL and U of MN prepared and completed a Web-based seminar that New Orleans inspectors accessed via computer.	Inspection of historic wood structures • Owners of historic wood structures • Inspectors of historic wood structures • Practitioners • Webinar • Web site

APPENDIX B: Project characteristics

The following six tables are provided to assist in understanding the characteristics of the eight projects

B1. Projects by knowledge sharing
B2.Characteristics of technology
B3. Projects by purpose
B4. Projects by media type
B5. Projects by primary audience
B6. Projects by organizational type

Table B 1. Eight Technology-based Knowledge Sharing Innovations	
Knowledge Sharing Innovation	**Project summary**
Interactive Web site to educate visitors of the Augusta Springs center, a U.S. Forest Service wetlands and conservation education center on the North River Ranger District, George Washington National Forest.	**www.AugustaSprings.org** Department of Forestry, Virginia Tech, Virginia The objective of this project was to develop an interactive Web site to educate visitors of the Augusta Springs center. The Web site is meant to facilitate on-line scheduling and communication with local school groups and enable school groups to prepare volunteers who lead groups through the center. The site also allows approved users (educators, teachers, etc.) to add their own content to share through this Web site.
Informational and training materials to be used for remote training workshops.	**Cooperative Weed Management Area (CWMA) Training for Eastern United States** The Nature Conservancy, Indiana The objective of this project was to develop informational and training materials to be used for remote CWMA training workshops in Eastern US through two on-line training sessions and one teleconference.
A community of practice for the Northeastern Minnesota Forest Products Action Team and the regional wood products industry using a variety of means.	**Demonstration of a Community of Practice to Enhance Economic Development** Northeast Minnesota (NE MN) Forestry Industry, Minnesota The objective of this project was to develop a community of practice for the NE MN Forest Products Action Team and the regional wood products industry using Web-pages, on-line plant visit reporting forms, Web-based seminars, chat rooms, e-newsletters, and archives as tools to accomplish sustainable economic development of the wood products industry in NE MN.
An interactive educational program for school districts to inform teachers, students and parents about the issues facing the Chequamegon Nicolet National Forest.	**Forest Resources and Ecology: A Distance Education Network Model** Chequamegon Nicolet National Forest, Wisconsin The primary objective of this project was to develop an interactive educational program using the Interactive Television (ITV) technology for seven Nicolet Distance Education Network (NDEN) school districts to inform teachers, students and parents about the issues facing the Chequamegon-Nicolet National Forest. The goal was to prepare students and teachers for hands-on conservation education projects by developing their skills to address forest issues and enabling them to share their knowledge and lessons learned through ITV and NDEN Web site.

Table B 1. Eight Technology-based Knowledge Sharing Innovations	
Knowledge Sharing Innovation	**Project summary**
A multimedia online learning network focused on native plant conservation and restoration.	**Native Plants Learning Network: Propagating restoration through technology** The Nature Conservancy, Michigan The objective of this project was to develop a multimedia online learning network focused on native plant conservation and restoration. The goal was to maximize relevant information sharing while minimizing time and travel by using interactive information technology such as video-conferences, Web sites and Web chats.
An interactive Web site that provides a forum for Place-Based education models.	**Promise of Place Interactive Web site** Shelburne Farms and Green Mountain National Forest, Vermont The objective of this project was to develop an interactive Web site, Promise of Place, to serve as a forum for sharing curriculum, best practices and other information regarding place-based education models that address natural resource related issues in the northeast.
A Web site to carry on informed dialog and develop community-based solutions to the problems of local wildlife.	**Sustaining White-tailed Deer and Forests: An Electronic Resource Center** Cooperative Extension, University of Georgia, Georgia A year-long effort to develop and market a single Web site to help communities around national forests facing deer overabundance to carry on informed dialog and develop solutions.

Table B 1. Eight Technology-based Knowledge Sharing Innovations	
Knowledge Sharing Innovation	**Project summary**
A community of practice for the inspection of historic wood structures.	**Web-based Learning and Technology Transfer of Inspection Methods for Historic Wood Structures** Natural Resource Research Institute (NRRI), University of Minnesota, Minnesota The objective of this project was to develop a community of practice for the inspection of historic wood structures using Web pages, Web-based seminars, video-streaming, chat rooms, e-newsletters, a marketplace and archives to provide direct assistance to owners of historic wood structures enabling better inspections, maintenance and safety of these structures. As a subset of this project, the project team conducted a Webinar for the City of New Orleans after hurricane Katrina. The City of New Orleans contacted Forest Products Laboratory (FPL) and NRRI for information that could be used to train building inspectors about the specific problems associated with flooded wood-frame homes and other buildings. The FPL and U of MN prepared and completed a Web-based seminar that New Orleans inspectors accessed via computer.

Characteristics

Table B 2. Wood Education and Resource Center, USDA Electronic Commons Program Teams Characteristics of technology				
Project Name	**Primary agency**	**Communication medium**	**Technology used**	**Characteristics**
Augusta Springs	Virginia Polytechnic Institute and State University Department of Forestry	Informational Web site	Collaborative format developed by Virginia Tech Computer Sciences Dept.	The collaborative format of this Web site allows registered users to upload text and pictures without having to know HTML or Web site management. It was meant to be updated by K-12 students and teachers who visit Augusta Springs and the natural resource educator from the regional forest service; however, as of November 2006 the Web site was only updated by the project lead and his interns.

Table B 2.
Wood Education and Resource Center, USDA
Electronic Commons Program Teams
Characteristics of technology

Project Name	Primary agency	Communication medium	Technology used	Characteristics
Cooperative Weed Management Area	The Nature Conservancy, Indiana	Webinars and teleconferences	WebEx hosted by Genesis Originally they were going to use Purdue University distance education system, but that required people to travel to certain locations, thus defeating the purpose of eliminating the need to travel.	The WebEx system allows users to upload their PowerPoint presentation and move through it on their own. It displays participants alphabetically, but does not display their affiliation, which would be nice to know. It allows participants to "raise hand" to indicate that they have a question and send messages via chat rooms either to the whole group or just selected participants. Because everyone can see who is participating, it enables them to contact each other if they desire so. The project lead selected WebEx because Nature Conservancy already had a contract with them, so they did not have to go through the process of technology selection. In addition to Webinars, they were simultaneously presenting their classes via a teleconference, which increased the cost but was necessary as people with MACs could not log on to the Webinar. This also allowed people who were not technologically savvy to simply download the application ahead of time from Nature Conservancy's Web site and go through by themselves while listening to the teleconference. This method worked well for the team as it eliminated frustrations experienced by the users who were not able to connect to the Webinar. Giving users more than one option was considered key to the overall success of this project.

Table B 2.
Wood Education and Resource Center, USDA
Electronic Commons Program Teams
Characteristics of technology

Project Name	Primary agency	Communication medium	Technology used	Characteristics
Demonstration of a Community of Practice to Enhance Economic Development	Northeast Minnesota Forestry Industry	Web pages, on-line plant visit reporting forms, Webinars, chat rooms, e-newsletters, a library, and archives	Web site will be hosted by the Northern Tier High Technology Corridor, Breeze was used for Webinars and online meetings.	Although the project lead was very satisfied with the functionality of Breeze, he also stated that it became a problem when some of his team members did not have access to high speed Internet.
Forest Resources and Ecology: A Distance Educational Model	Chequamegon-Nicolet National Forest	Existing Web site and Interactive Television (ITV) network		The ITV network employed by this project was already present in the school districts they were serving. The project lead sought to enhance ITV's use and therefore provided initial training to teachers to ensure their willingness to participate. They found that by providing additional incentive (offering educational credit for attending the class) they were able to motivate teachers to engage with the system and thus participate in their project.
Native Plants Learning Network	The Nature Conservancy, Michigan	Information coordination Web site, virtual field trips, information database, monthly Web casts	Instantly Global but originally used Breeze for Web casts Web site available through the Stewardship Network	The project originally used Breeze through their contact with Michigan State University, so when the university switched to Instantly Global (IG) they were also forced to use Instantly Global. The project team thought that both programs were equally good, although they both had their advantages and disadvantages. The biggest advantage of IG is that it can be used by PC and MAC users alike, which is not the case with Breeze. IG also has a slide preview, which is helpful when going through a presentation. On the other hand you cannot manipulate the screen and the chat window is rather small. The project lead found

Table B 2.
Wood Education and Resource Center, USDA
Electronic Commons Program Teams
Characteristics of technology

Project Name	Primary agency	Communication medium	Technology used	Characteristics
				IG more intuitive and better suited for computer novices. There were several features that they missed such as being able to see participants in chronological order. IG is Web based so uploading is not a problem and different hosts can control the presentation even if they are not in the same room. The main disadvantage of switching between these two programs was that they lost their archived presentations.
Promise of Place Interactive Web site	Shelburne Farms and Green Mountain National Forest	Web site		They were able to hire an IT manager who assisted them with selection of technology and a vendor. Although it delayed the design of their Web site, the team knew that having the person who will be tasked with managing the Web site be part of the selection process was key.
Sustaining White-tail Deer and Forests	University of Georgia Cooperative Extension	Web site	Modeled after existing encyclopedic Web sites such as Forest Encyclopedia Network	Because of the university setting, the team had experienced IT personnel on board, which was very helpful when designing the Web site. In order to ensure proper content, they reached out to their contacts and via a snowball method received feedback about the need of the community they were targeting.
Web-based Learning and Technology Transfer Historic Wood Structures	University of Minnesota Natural Resource Research Institute	Webinars	Breeze	The project leads were satisfied with Breeze as it allowed them to manipulate what people saw on the screen, it allowed them to move everyone through the presentation and it also allowed the project team to share and collaborate on documents. Both project

Table B 2. Wood Education and Resource Center, USDA Electronic Commons Program Teams Characteristics of technology				
Project Name	**Primary agency**	**Communication medium**	**Technology used**	**Characteristics**
				leads were comfortable with the technology, although they both stated that having previous experience as a participant was helpful in knowing what works and what does not in this type of distance education. Overall, they were very positive about their experience.

Purpose

Table B 3.
Wood Education and Resource Center, USDA
Electronic Commons Program Teams
Projects by Purpose

Project Name	Primary agency	Community of Practice	Dissemination of Information	Distance Education
Augusta Springs	Virginia Polytechnic Institute and State University Department of Forestry		**X**	
Cooperative Weed Management Area	The Nature Conservancy, Indiana	**X**		**X**
Demonstration of a Community of Practice to Enhance Economic Development	Northeast Minnesota Forestry Industry	**X**	**X**	
Forest Resources and Ecology: A Distance Educational Model	Chequamegon-Nicolet National Forest			**X**
Native Plants Learning Network	The Nature Conservancy, Michigan	**X**	**X**	
Promise of Place Interactive Web site	Shelburne Farms and Green Mountain National Forest	**X**	**X**	
Sustaining White-tail Deer and Forests	University of Georgia Cooperative Extension	**X**	**X**	
Web-based Learning and Technology Transfer Historic Wood Structures	University of Minnesota Natural Resource Research Institute	**X**	**X**	

Media Type

Table B 4.
Wood Education and Resource Center, USDA
Electronic Commons Program Teams
Projects by Media Type

Project Name	Primary agency	Web sites	Webinar	Interactive TV	Meeting Software
Augusta Springs	Virginia Polytechnic Institute and State University Department of Forestry	Proprietary software			
Cooperative Weed Management Area	The Nature Conservancy, Indiana		WebEx		
Demonstration of a Community of Practice to Enhance Economic Development	Northeast Minnesota Forestry Industry	HTML			Breeze
Forest Resources and Ecology: A Distance Educational Model	Chequamegon-Nicolet National Forest	HTML		ITV	
Native Plants Learning Network	The Nature Conservancy, Michigan	HTML	Breeze and Instantly Global		
Promise of Place Interactive Web site	Shelburne Farms and Green Mountain National Forest	HTML			
Sustaining White -tail Deer and Forests	University of Georgia Cooperative Extension	HTML			
Web-based Learning and Technology Transfer Historic Wood Structures	University of Minnesota Natural Resource Research Institute	HTML	Breeze		Breeze

Primary Audience

Table B 5.
Wood Education and Resource Center, USDA
Electronic Commons Program Teams
Projects by Primary Audience

Project Name	Primary agency	K-12	Practitioner	Public
Augusta Springs	Virginia Polytechnic Institute and State University Department of Forestry	**X**		
Cooperative Weed Management Area	The Nature Conservancy, Indiana		**X**	
Demonstration of a Community of Practice to Enhance Economic Development	Northeast Minnesota Forestry Industry		**X**	
Forest Resources and Ecology: A Distance Educational Model	Chequamegon-Nicolet National Forest	**X**	**X**	
Native Plants Learning Network	The Nature Conservancy, Michigan		**X**	
Promise of Place Interactive Web site	Shelburne Farms and Green Mountain National Forest	**X**	**X**	
Sustaining White-tail Deer and Forests	University of Georgia Cooperative Extension		**X**	**X**
Web-based Learning and Technology Transfer Historic Wood Structures	University of Minnesota Natural Resource Research Institute		**X**	

Organizational Type

Table B 6. Wood Education and Resource Center, USDA Electronic Commons Program Teams Projects by organizational type of primary agency			
Project Name	**Primary agency**	**University**	**Not-for Profit**
Augusta Springs	Virginia Polytechnic Institute and State University Department of Forestry	**X**	
Cooperative Weed Management Area	The Nature Conservancy, Indiana		**X**
Demonstration of a Community of Practice to Enhance Economic Development	Northeast Minnesota Forestry Industry	**X**	
Forest Resources and Ecology: A Distance Educational Model	Chequamegon-Nicolet National Forest		**X**
Native Plants Learning Network	The Nature Conservancy, Michigan		**X**
Promise of Place Interactive Web site	Shelburne Farms and Green Mountain National Forest		**X**
Sustaining White-tail Deer and Forests	University of Georgia Cooperative Extension	**X**	
Web-based Learning and Technology Transfer Historic Wood Structures	University of Minnesota Natural Resource Research Institute	**X**	

APPENDIX C: Project Highlights

AugustaSprings.Org

Project Lead: Dr. Jeff Kirwan
Contact Information: 540-231-7265; jkirwan@vt.edu

Objectives
The purpose of this project was to meet the demands of increased visitation to the Augusta Springs Wetlands as personnel shortages continue. The Web site is meant to facilitate on-line scheduling and communication with school groups, lessening the time USFS and other agency personnel would otherwise spend on these tasks. It is also meant to enable school groups to prepare volunteers who lead groups through the site. The Web site has station descriptions, photographs, maps, simple lesson plans and other volunteer information that can be shared electronically with minimum time and effort. Potential volunteers are directed to the site to gain better understanding of what is expected and needed of them. Lastly, the Web site design was kept simple so that teachers and students could add content to the site based on their experiences.

The project's intended audience includes individuals interested in learning about Augusta Springs, such as conservation educators, teachers, volunteers, undergraduate students, and advanced K-12 students, to add their own content and research to the Web site. On the other hand, it is used as a communication tool to provide information about Augusta Springs Environmental Education to the nearby communities, visitors to the site, school groups, volunteers working the learning station, local agencies, etc.

Project Management
Planning for this project was a result of Dr. Kirwan's forethought. Although the Web site is serving as a tool to disseminate information about Augusta Springs, it has not fulfilled all the goals originally envisioned. Online registration is not available and content is edited mainly by the interns. Project team consists of Dr. Jeff Kirwan, Dr. Daniel Dunlap, the Augusta Springs Environmental Educator Sandy Greene, and interns Cristina Issem and Melanie Nichols.

Technology
Most Web technology represents one-way communication from Web content developers flowing to end-users. The proposed technology is collaborative, enabling cross-communication as users add, delete and edit content to the site as needed with minimal effort. Also, a new learning station is being developed to display alternative energies, like solar, wind, and man-powered activities. These technologies will complement, organize and enhance an already successful program. The web-based technology was known only to Dunlap and Kirwan and then passed down while the alternative energy items are known by Greene and Nichols.

The technology is easily sustainable as it serves as a main line of communication from facilitators to the volunteers to the school groups and teachers. The Web site allows volunteers to prepare with minimal guidance from personnel. Dr. Dunlap designed the Web site and assists Dr. Kirwan in training individuals how to use it.

Experience to Date
The largest success factor is that this Web site quickly became an excellent communication tool to the volunteer station leaders, largely credited to Mrs. Greene. She constantly steers everyone involved from the school groups, to the teachers and many more to the Web site. Another major benefit was the development of a larger Web site Forested.org. This site is a collection of various environmental education Web sites for this area of Virginia. Unfortunately, the project team has not been able to disseminate information to the teachers and school students that they can use the Web site to post their own materials. Although they use it to get background information they have not realized its potential just yet.

The technology used here is easy to reproduce. The concept of a place-based electronic commons can serve conservation education programs wherever they exist.

Advice to Others

"The environment you surround yourself in is key. You need to develop many partners to complement your skills. This was a key factor in the success of this project. With limited personnel resources available in the area, this program is still a huge success because of the partnerships in education which include the Headwaters Soil and Water Conservation District, US Forest Service North River Ranger District (Dry River R.D. at the start of the project), Virginia Cooperative Extension, the Virginia Department of Game and Inland Fisheries and more. Each can offer some help and thus it is enough to maintain the Wetlands Environmental Education program."

Cooperative Weed Management Area Training for the Eastern U.S.

Project Lead: Katherine Howe
Contact Information: 317-951-8818; khowe@tnc.og

Objectives
The objective of this project was to promote Cooperative Weed Management Areas (CWMA) as a strategy to combat invasive species by developing training materials and presenting them via WebEx technology to the Eastern U.S. where CWMAs have not been widely adopted. These workshops provide information on how and why to develop CWMAs, with information tailored specifically to the Eastern region, such as which government agencies have jurisdiction over invasive species, what noxious weed laws are on the books in each state, and which groups and agencies are likely to be key potential partners. The project's intended audience includes all individuals working to decrease the impact of invasive species – local municipalities, state, federal, NGO, and corporate entities.

Project Management
The starting point for this project was a very effective 'cookbook' on CWMAs developed for the western states edited to better address the eastern landscape and issues. This was then presented at four trial training sessions and the feedback received from it was used to fine-tune their final course. The project was a result of collaboration of many, including the Butler University, Wisconsin DNR, Center for Invasive Plant Management and the U.S. Forest Service. In addition to partnering with organizations experienced in the subject, they also sought input from several eastern CWMAs and used their success stories in their course materials.

The materials produced in this project were made available on the Midwest Invasive Plant Network Web site and they will be encouraging people who have attended their training sessions to use these materials to teach others to ensure continuous value of this project. In addition, they will also hold a conference in December 2006 to promote creation of CWMAs and to address issues that people have encountered in their efforts.

Technology
Originally the project team planned to use Purdue University extension satellite system; however, it became apparent that doing so would require participants to travel to an extension satellite class office, which negated the goal of offering a class without the need to travel. As a result, they decided to use Nature Conservancy's WebEx system, which enabled them to present their lesson over the internet. Prior to using WebEx they have also used a simpler method, where each participant received a PowerPoint presentation on a CD and the presentation itself was conducted over a conference call with each participant moving through the presentation by him/herself.

Prior to the beginning of this project, none of the project leaders were very familiar with this kind of technology with only two of them having taken classes via WebEx technology. Although overall the technology has worked well, the presenters pointed out some issues that they encountered, such as people not able to connect because of technical problems and inability to establish a personal rapport with the participants. Overall, their experience with the technology has been positive, with WebEx being relatively simple and fairly effective for training. However, they had to do more extensive research into the capabilities of different media than originally expected. They also emphasized that sometimes a less expensive and less technically sophisticated option serves just as well.

Experience to Date
Overall, their experience to date has been very positive. They were able to develop a network of CWMA coordinators across the eastern US and at the same time promote their own organization, the MIPN. This project has also had the unintended benefit of allowing the project team to network and make connections between different groups trying to accomplish the same things.

The key to their overall success was the partnership they established that decreased the burden on MIPN staff. Having a variety of people develop and edit the materials also enabled them to include a wide variety of examples and different viewpoints. Having two trainers also made the class more interesting for students, and decreased the work for each trainer. Although face-to-face training is still the preferred method, this solution is excellent for situation where travel simply is not possible.

Advice to Others
"When planning a project involving technology, make sure to try it out before committing to it - that's the only way to assure it is the right technology for your project."

Northeast Minnesota Forest Industry Action Team: Demonstration of a Community of Practice to Enhance Economic Development

Project Lead: Brian Brashaw
Contact Information: 218-720-7248; bbrashaw@nrri.unm.edu

Objectives
The objective of this project was to develop a community of practice through web-based information technologies to support sustainable economic development of the forest products industry in the communities of northeast (NE) Minnesota. The focus of this project is to use this advanced communication technology as a tool for NE Minnesota Forest Industry Action Team that will concentrate on strengthening and growing existing wood products businesses.

The project is aimed at two audiences. The first is the membership of the NE MN Forest Industry Action Team including the Superior National Forest, Cook, Lake and St. Louis Counties, the Minnesota Department of Natural Resources and Iron Range Resources Agency, Minnesota Power, the Arrowhead Regional Development Council, and the University of Minnesota's Extension Service and the Natural Resources Research Institute. The second audience includes wood product industry businesses in NE Minnesota such as logging companies, primary and secondary wood products manufacturers.

Planning
The project team consulted with technology specialists at Bemidji State University's Northern Tier High Technology Corridor to identify appropriate Web-based communication packages that would help them meet their project goals. They also conducted face-to-face planning meetings with the membership of the NE MN Forest Action Team to develop the goals and objectives of the original project. Throughout the last 4 months, the project team has conducted monthly meetings between the majority of the project collaborators using the web-based meetings and plan to continue them into the future.

Technology
A secure interactive collaborative based Web platform provided by the Northern Tier High Technology includes instant messaging, team meetings, discussion forums, team calendar, task manager, and a virtual library which allows for the uploading documents, images, graphics, spreadsheets and more. The project team also used Adobe Breeze for on-line meetings and Webinars.

Experience to Date
The primary barrier experienced by the project team were the competing project priorities of its key members. The project lead also had to spent significant amount of time trying to organize and utilize the members of the Action Team. Because it is a newly created entity, it required time to find the best manner for them to interact. Originally the project started with a potential membership of 20+ members from a dozen or so organizations. However, as they struggled to develop a platform for convenient and effective interaction, they scaled down to having 6 organizations as the core group. Going back to a smaller core group proved to be effective and allowed the project team to get back on track and proved easier to manage.

In addition to scaling down the core membership, the project team also decided that their target audience was somewhat small and often lacked access to high speed internet. For that reason, they changed their Webinar concept from live to recorded, on-demand type Webinars. This way, people could access them from various locations at their convenience. They are also exploring the potential for pod casting.

Advice to Others
"It is important for a group to have good functioning dynamics prior to an effort to make the communication electronic. We focused down on just a core group of organizations and individuals who for the most part had a long term cooperative relationship. This helped smooth the transition to electronic meetings."

Forest Resources and Ecology: A Distance Education Network Model

Project Lead: Michele Nickels
Contact Information: 715-365-4685; mwageli@nicoletcollege.edu

Objective
The objective of this project was to build upon an existing distance education ITV network to provide students, teachers, and their communities with knowledge about current issues facing the Chequamegon-Nicolet National Forest, as well as provide them with hands-on experiences to enhance their learning. The project was designed to reach approximately 880 students, teachers and community members in Crandon, Elcho, Goodman, Laona, and Mercer Tomahawk school districts who are members of the Nicolet Distance Education Network (NDEN) as well as other schools whose participation did not include hands-on experiences. Additionally, the information presented was made available to members of the Wisconsin Association of Distance Education Networks (WADEN) through the 40 Wisconsin Interactive Television Networks located in over 500 schools and communities throughout the state.

Project Management
This project was an extension of an already existing program, thus enabling the project manager to draw upon previous experiences and existing partnerships. Because the project had a large number of stakeholders with each having their own objectives they were trying to achieve, the project manager organized a meeting at the beginning of the project to collect input and create a shared vision among the project stakeholders. In addition they discussed the project's organization and oversight to ensure transparency throughout its duration. In the following months, the project manager facilitated communication and face-to-face meetings between project partners and participating students and teachers to ensure on-going understanding of the objectives as well as making adjustments as needed due to unanticipated changes in personnel. In addition, the project manager maintained involvement with the school administrators whose support for the project was key to its success.

Technology
The project used Interactive Television (ITV) network already available throughout the region. ITV technology allows for real time transmission of audio, video and data between all participant sites and helps to bridge the geographical distance between communities of learners. The technology was used by project participants to obtain necessary background information and to disseminate project results to other project participants and other interested parties statewide. In addition to the ITV network, the NDEN Web site further disseminates project information along with contact information so communities within the northern hardwood regions can implement similar programs on their National Forests.

Experience to Date
The overall experience of the project team and of the participants has been very positive. The teachers and forest personnel were able to build relationships that will enable them to continue with their projects and gained knowledge not only about forestry but also about the ITV network and its potential. Similarly, the hands-on projects gave students unique opportunity to gain a better understanding of their communities and its surroundings.

The project also reaffirmed the value of existing partnerships and the necessity of on-going communication. As mentioned above, changes in personnel required the project manager to negotiate new objectives and to make changes necessary to accommodate the new expectations. The project also required unexpected amount of materials and time and cost associated with getting them into the correct hands for various projects.

Advice to Others
"Embarking on a project of this scope that involves numerous school districts and resource organizations requires rigorous planning meetings to allow for open dialogue between all participants. This will ensure that the participants have a clear understanding of the project, there is sufficient support to carry out all components of the project and that the project is designed to meet the goals, mission and curricular needs of all parties involved."

Native plants learning network: Propagating restoration through technology

Project Lead: Lisa Niemi and Lisa Brush
Contact Information: Lisa Niemi – lniemi@tnc.org

Objectives
The overarching goal of this project was to promote restoration/protection of native plant sites through information exchange facilitated via a multimedia online learning network. The network's purpose is to facilitate communication and to make information sharing easy by utilizing tools and technology to accommodate different learning styles. The intended audience includes conservation practitioners, academics, conservation volunteers, and general public interested in the topic.

Project Management
Before embarking on this project, the project team reviewed the latest Web technology as well as existing Web tools/networks regarding native plant restoration. In addition, they initiated discussions with target audiences regarding topics and tools of interest through informal Stewardship Network partner conversations and through four community-wide brainstorming sessions at the Stewardship Network's local cluster kick-offs. There are three primary partners with whom the project manager communicated via a conference call once a month and more frequent email exchanges.

The tools developed and implemented through this project will continue to be available via the Network's Web site. The calendar and the online searchable restoration database will also continue to be maintained, publicized and populated. The Web casts were received very positively and it is the intention of the project team to continue to offer these, contingent upon securing funding.

Technology
The project encompassed a variety of technologies, including virtual field trips, Web casts, a searchable project database and a calendar. The Web casts were facilitated via Instantly Global which enables the presenters to upload a PowerPoint presentation that can then be viewed and heard, through audio stream, by participants. There is a live text chat component as well. The searchable project database is be hosted on the Stewardship Network's Web site provided by Kintera. It is searchable by a number of parameters and provides a location on the Web where conservation practitioners can share information. The stewardship calendar offers a central location on the web to post volunteer workdays, workshops, and other conservation events for dispersal.

The initial project lead has had previous experience with alternative modes for information sharing due to his remote physical location from his colleagues; however it was the whole core team that came up with the practical suite of technology to be used in this project.

Experience to Date
Although the project overall has been successful, some of the specific outreach components could not be completely fulfilled because of the loss of the two main collaborators due to job advancements. The original project planned for the virtual field trips to be developed by a range of partners throughout the Eastern U.S. but due to the limited resources and the tight timeframe of the grant period, the virtual tours are being developed by the Stewardship Network and have a Michigan geographic focus. In addition, the virtual field trips are proving to more involved both technologically (PC and Mac incompatibility) and inter-organizationally (the coordination of very busy partners to develop learning objectives, meet their organizational needs, capture footage, etc.).

In addition, the project team faced the task of finding a niche and turning potential competition or repetition into an opportunity to reach a greater audience. For example, the Global Restoration Network is in the process of launching a restoration database. The challenge will be to identify how the searchable project database developed through this project fits within the global network. The project has also fostered some unanticipated benefits, such as increased levels of collaboration among the partners on future projects, and the added benefit of exposing the project team to new IT tools that are likely to be utilized in their future endeavors.

Advice to Others

Planning is critical – It is worth spending a great deal of time upfront planning, developing a schedule in advance Publicity and marketing of the tools and resources are important components Be open and flexible - you will not always be able to achieve exactly what you would have liked given the complexity of the desired outcome. Build a solid network of technical advisors to guide the process

Promise of Place (POP) Web site

Project Lead: Megan Camp
Contact Information: 802-985-8686; mcamp@shelburnefarms.org

Objectives
The objective of this project was to develop a Web site that would promote place-based education through sharing stories, exemplars and facilitating dialogue with formal and non-formal educators, administrators, government agencies, and interested citizens. The organizations that are partners in this project can either move their place-based education pages onto the new site or, if they do not currently have a Web site, can create a new page on the Promise of Place Web site. In addition, the Web site is meant to advertise and document the bi-annual Promise of Place Conference.

Project management
After the selection of a project leader and an assistant, a team of people was contacted to identify what they would want in a POP Web site. The members of this team represented several place-based education groups in Vermont and New Hampshire, plus the Place-based Education Evaluation Collaborative research group. They developed a list of criteria through sharing favorite Web sites over the e-mail and met five times to develop a final listing of criteria to use to seek Web site designers. Although the final product includes majority of the elements identified by the project team, its design has been kept relatively simple because of unexpectedly high costs. The project team hopes to revisit the design in the future to move it closer to the type of Web site envisioned at the beginning of the project.

Technology:
The design of the Web site was contracted out to a private web-design company and the site itself is administered by a group of registered users, each of whom is responsible for a particular part of the site that corresponds to their own area of expertise. The Web site also has both public areas and private, password-only areas. This makes it possible for the POP Web site to function not only as a means of communicating with place-based education contributors from all over New England (and the world), but it also can function as a channel for internal communication as well (an Intranet).

Experience to Date:
The Web site was launched slightly behind schedule because of delays in hiring an IT Administrator for the Sherburne Farms. The decision to delay the decision about the Web site development company was informed by previous experience where a technology was purchased that was later not compatible with future IT plans of the organization. The training of all the project members is still underway.

Throughout the project they have realized the value of on-going communication and the difficulty of combining various objectives and goals of a large group into a common vision.

Advice to Others
"If someone else was to consider setting up a Web site with partners, I would advise them to become as familiar with Web sites, Web hosting, and working with non-profits as possible. A good resource is the Foundation Center—the tech-soup software for non-profits, and good advice on the differences between "for profit" and "non-profit" partners."

Sustaining White-tailed Deer & Forests: An Electronic Resource Center

Project Lead: Dr. William Hubbard
Contact Information: 706-542-7813 whubbard@uga.edu

Objectives
The project goal is to develop and market a Web site that will help eastern United States communities (i.e., all states east of the Mississippi) around national forests and other locations have informed dialogue about and develop solutions for deer and forest interactions. Web resources are accessible to all stakeholders and synthesize in images and lay language our knowledge about deer habitat quality, deer impacts, and management strategies. To the extent possible, the Web site provides public domain or permission-granted literature about deer-forest interactions or provides links to such literature.

While eastern United States communities around national forests are the initial target audience, the Web site is accessible to a broader audience including students, hunters, landowners, extension educators, and researchers.

Project management
Bill Hubbard, University of Georgia Cooperative Extension, in collaboration with Dr. Susan Stout, USDA Forest Service Northern Research Station, and Dr. Jim Finley, the Pennsylvania State University Cooperative Extension, developed the project. Project collaborators (i.e., white-tailed deer and forestry experts) were enlarged through sub-regional conference calls. These conference calls with mid-western, northeastern, and southern technical experts covered key white-tailed deer and forest interactions issues, existing resources to include in the Web site, framing the Web site to engage the public, and Web site format.

Based on input from 30 regional technical experts, the Web site focus shifted from deer overabundance to identifying and creating healthy forest landscapes for deer. The Web site target audience also expanded from communities around national forests to all individuals interested in learning about the eastern US forest and deer interaction. A companion PowerPoint presentation for the Web site will be developed with the intent of educating the public and landowners through extension education programs.

Technology
The site was developed using an open source content management system (CMS) entitled, Plone. Dr. Hubbard has previously been involved with numerous projects developed with Plone. Due to his previous experiences, he knew Plone CMS could easily meet the project requirements. Other than Dr. Hubbard's experiences, Matt Howell, University of Georgia Cooperative Extension, has almost three years of experience developing projects using Plone and was the only other member of the team who has previous experience with the software. Examples of Plone's features were presented to the project team who agreed to use the software's built-in features to create a user-friendly site.

Experience to Date
The project team has encountered both barriers and benefits in this project. Input from the regional technical experts is an important factor in the project's success as well as a project benefit. The technical experts provided breadth and depth to the deer forest interface allowing the team to see new nuances. For example, the initial Web site focus was deer overpopulation. The technical experts noted there are eastern sub-regions where low deer populations are a concern and explained the current focus may alienate some target audiences. As a result of their input, the site focuses on quality deer management. The revised site assists visitors in recognizing and fostering healthy forests and deer herds, and can easily be replicated for other topics.

The most important project barrier is copyright laws for non-public literature. The project team intended to post all relevant literature in PDF format, making it easily accessible to the public. Copyright laws make it impossible to post journal articles. The team will post public-domain and permission granted literature on the deer-forest interface on the site and will link to copyrighted literature.

Advice to Others

"Based on our experience, we highly recommend forming technical committees to ground truth and provide expertise during initial project development. Their input was invaluable to this project and they are an important component of the product evaluation and its dissemination to the public."

Web-based Learning and Technology Transfer of Inspection Methods for Historic Wood Structures

Project Lead: Brian Brashaw
Contact Information: 218-720-7248; bbrashaw@nrri.unm.edu

Objectives
The objective of this project was to demonstrate the use of communities of practice through Web-based information technologies to share and transfer information related to inspection of historic wood structures. The project's aim is to develop a community of practice for the historic inspection of wood structures and to provide direct assistance to owners (federal, state, county, private or non-profit) of historic wood structures enabling better inspections, maintenance and safety of these structures through the community of practice portal. Throughout the project's duration the team conducted several inspections of historic structures in Minnesota, Wisconsin and Michigan for use in their Web casts. In addition, they have conducted a Web-based seminar for building inspectors in the New Orleans area after hurricane Katrina.

Project Management
The project team members have extensive knowledge in the area of condition assessment of wood structures gained through the past decade spent researching this subject. Throughout the years the team members have organized and conducted numerous workshops and short courses. This project served as an extension of their ongoing activities and was meant to expand their ability to transfer knowledge using Web-based communication like Webinars and interactive Web portals. At the outset of the project, the project team reviewed various web-based technologies for use in their Web casts and drew on their previous experiences with these tools. The primary partner was the USDA Forest Products Laboratory with whom the project lead had regular bi-weekly contact. The project team also cooperated with the Northern Tier High Technology Corridor at Bemidji State University who is hosting the Web portal and the on-line meeting platform used at the start of the project.

Technology
After a review of the different options available to the project team, they opted for an interactive collaborative-based Web platform managed by the Northern Tier High Technology Corridor (www.ntht.org) and for Adobe Breeze for on-line meetings and Webinars. The collaborative suite includes instant messaging, team meetings, discussion forums, team calendar, task manager, and a virtual library, which allows for the uploading of documents, images, graphics, spreadsheets and more. Breeze allows for use of Microsoft PowerPoint for the PC to create multi-media content for the Web as well as communicate, collaborate, and teach over the Web in real-time through Web conferences and Web casts. Although the project team has participated in Webinars, they did not have a previous experience with conducting one.

Experience to Date
Throughout their project the team has gained a lot of experience with the use of Breeze as both a presenter tool and a meeting tool. Although teaching via a Webinar had its weaknesses it has proven to be a useful tool that the project members will continue to use to facilitate project planning, collaboration and interaction for many of their projects, not just the two funded in the *Electronic Commons Program* Project. They were also able to generate two fee-based inspections as the result of their Webinar on WAPAMA, a historic wooden schooner in the San Francisco Maritime National Historic Park.

The key to the project's success was a project team that had extensive knowledge of the topic area and experience with conducting short courses. Also, Breeze proved to be an effective tool that was very user friendly for both, the moderator and the Web cast participants, which allowed the instructors to concentrate on the delivery of their course rather than the nuts and bolts of the technology. The biggest barrier encountered by the project team were the competing priorities experienced by some of the key members.

Advice to Others
"Don't be afraid to step out and try web-based communication. You may not know exactly how to do it, but most all options are possible based on new technology and software development. Find good cooperators and let them

help you with the technology component of the project. Go with your research or discipline strengths first, then reach out for the technology component."

APPENDIX D: Teleconference Participants

USDA Forest Service

Al Steele
Physical Scientist/Forest Products Specialist

Donald Howlett
Partnership and Rural Community Assistance Coordinator
Regional Conservation Education Program Manager

Northern Initiatives

Peter Cambier Vice President

Augusta Springs

Jeff Kirwan	Extension Specialist Virginia Tech Department of Forestry
Christina Issem	VT Intern

Cooperative Weed Management Area Training for Eastern United States

Katherine Howe	The Nature Conservancy, IN
Ellen Jacquart	The Nature Conservancy, IN
Marcia Moore	Butler University
Rebecca Dolan	Butler University
Kelly Kearns	Wisconsin Department of Natural Resources

Demonstration of a Community of Practice to Enhance Economic Development

Brian Brashaw	Director Wood Materials and Manufacturing Program Natural Resources Research Institute University of Minnesota
Michael Reichenback	Extension Educator University of Minnesota Cloquet Forestry Center
Lisa Pattni	Partnership Coordinator Superior National Forest
Michael Welcome	Associate Director Northern Tier High Technology Corridor Bemidji State University,

Forest Resources and Ecology: A Distance Education Network Model

Michele Nickels	Distance Education Network Assistant Director and Project Director Nicolet Distance Education Network

Native Plants Learning Network: Propagating restoration through technology

Randy Swaty	The Nature Conservancy, MI
Lisa - Brush	Executive Director Stewardship Network

Promise of Place Interactive Web site

Megan Camp	Shelburne Farms and Green Mountain National Forest

Sustaining White-tailed Deer and Forests: An Electronic Resource Center

William Hubbard	University of Georgia Cooperative Extension

Web-based Learning and Technology Transfer of Inspection Methods for Historic Wood Structures

Brian Brashaw	Director Wood Materials and Manufacturing Program Natural Resources Research Institute University of Minnesota
Michael Wellcome	Associate Director Northern Tier High Technology Corridor Bemidji State University
Robert J. Ross	USDA Forest Service – Forest Products Laboratory

APPENDIX E: Reflection Workshop Participants

USDA Forest Service

Al Steele	Physical Scientist/Forest Products Specialist
Donald Howlett	Partnership and Rural Community Assistance Coordinator Regional Conservation Education Program Manager

Northern Initiatives

Peter Cambier	Vice President

Augusta Springs

Jeff Kirwan	Extension Specialist Virginia Tech Department of Forestry
Melanie Nichols	Environmental Education Intern Virginia Tech Department of Forestry

Cooperative Weed Management Area Training for Eastern United States

Ellen Jacquart	Director of Stewardship The Nature Conservancy, IN

Demonstration of a Community of Practice to Enhance Economic Development

Brian Brashaw	Director Wood Materials and Manufacturing Program Natural Resources Research Institute University of Minnesota

Forest Resources and Ecology: A Distance Education Network Model

Michele Nickels	Distance Education Network Assistant Director and Project Director Nicolet Distance Education Network

Native Plants Learning Network: Propagating restoration through technology

Lisa Niemi	Conservation Coordinator Upper Peninsula Program Office The Nature Conservancy, MI
Lisa Brush	Executive Director Stewardship Network

Promise of Place Interactive Web site

Kathleen Diehl	Public Affairs Officer, Green Mountain National Forest

Sustaining White-tailed Deer and Forests: An Electronic Resource Center

Matthew Howell	IT Senior ManagerUniversity of Georgia Cooperative Extension
Laurie Schoonhoven	Program Specialist University of Pennsylvania Cooperative Extension

Web-based Learning and Technology Transfer of Inspection Methods for Historic Wood Structures

Brian Brashaw	Director Wood Materials and Manufacturing Program Natural Resources Research Institute University of Minnesota

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