e-Extension
Pre-Select Business Case

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For two years a core team from the Land-Grant community has worked on the e-Extension initiative and worked with Accenture in developing this business case. These include Richard Wootton, Director of Extension and Outreach, National Association of State Universities and Land-Grant Colleges; Ronald A. Brown, Executive Director, Association of Southern Region Extension Directors; Greg Crosby, National Program Leader, CSREES/USDA; Terry Gibson, University of Wisconsin (retired); Linda Williams-Willis, Administrator, Prairie View A & M University; and Steve Wyatt, Business and Industry Director, University of Missouri Extension.

In addition to this core staff, almost every Land-Grant university in all states and territories have had input into development of the e-Extension initiative, either during regional or national meetings, by service on steering or advisory committees, or via electronic means. Significant time and contributions have been made by individuals who participated in special assignment and various work teams during the development process. These include Fred Piazza, Dan Cotton, Dave King, Steve Wyatt, Larry Lippke, Tom Bunnell, Jeanne Gleason, Sharon Wright, Chris Rogers, Tom Nickel, Terry Wolfork, Fedro Zazueta, Carla Craycraft, Arlen Leholm, Don Poucher, Rob McDaniel, and Valorie McAlpin.

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An Executive Committee has established policy and reviewed the process. Members include David Foster, Oklahoma State University; Melanie Gardner, National Agriculture Library; David King, Purdue University; Larry Lippke, Texas Cooperative Extension Service; Terry Meisenbach, CSREES/USDA; Carl O’Connor, University of Wisconsin; Jack Payne, Utah State University; Janet Poley, ADEC; and James Wade, University of Maryland. Brown, Crosby, Gibson, Williams-Willis and Wootton, mentioned earlier, also serve on the Executive Committee.
The Extension Committee on Organization and Policy (ECOP), representing the Cooperative Extension system nationally, approved a proposal from the Association of Southern Region Extension Directors (ASRED) to pursue development of an e-Extension initiative and has provided support and guidance throughout the process. The directors and administrators at the 2003 National Extension Director and Administrator (NEDA) meeting requested the development of this business case. Appreciation is expressed to directors and administrators, nationally, and to ECOP for their guidance and support.

To the many who have made invaluable commitments of time, intellectual capacity, financial resources and a vision for what the Extension system can be, sincere gratitude is expressed.
Preface

This e-Extension business case was developed by Accenture for the Cooperative Extension System to facilitate evaluation of the proposed e-Extension initiative. This is an accurate and nearly final draft. It is a detailed investment proposal and provides an analysis of identified costs, benefits and risks associated with the proposed investment and offers reasonable alternatives. This business case provides the information necessary to make a decision about whether the project should proceed. This decision process will continue throughout the entire lifecycle of development. This case should be reviewed and revalidated at each scheduled project review and whenever there is a significant change to the project or the business function.

Because the education mission of the Cooperative Extension System aligns closely with the mission of government, the US eGovernment Initiative business planning process was selected and was implemented by Accenture. The eGovernment initiative is more than applying technology; it is about business transformation focused on citizen-centric delivery and efficiencies in productivity.

The benefit estimates in this business plan were calculated in dollars from the value of time and are, by design, conservative estimates generated by Accenture. It is important to realize the costs presented in the business plan do not include the in-kind contributions from state Extension organizations that will be required to populate numerous content development teams that will be needed to provide information to possibly hundreds of communities of interest. These kinds of estimates will be further detailed during the implementation and start-up phase.
Executive Summary

Cultural and technological changes are quickly outpacing the traditional Extension delivery model. Extension’s next generation of customers, the techo-savvy generation, will make this even truer. Extension must gear up to provide high-quality, Internet-based information for current and future customers who are more likely to use information technology. With an increase in the amount of information comes the opportunity, for those with an education mission to manage and understand that information more effectively. The Extension leadership recognizes the consistency of the Extension mission with the significant opportunity to more effectively use technology to compete in the current marketplace and to address current and future Extension challenges.

Faced with recent trends of shrinking budgets, reduction in personnel, and the need to more effectively reach new and traditional customers, e-Extension provides a solution to fulfill its mission as it faces these disadvantages. The e-Extension business plan provides concrete and compelling qualitative and quantitative benefits and costs of a desired course of action, analyzes the alternatives, recommends the best solutions, and outlines the desired outcomes and goals of this initiative. This business case clearly shows the potential for financial and human resource efficiencies through e-Extension.

Customer Value

Trustworthy Access. Customers will have access to specialized packages of information and education, 24 hours a day, 7 days a week, 365 days a year. The information will be trustworthy, science-based, peer reviewed and user validated. This information will assist customers in making positive decisions affecting their prosperity and quality of life. Customers will have access to information on their terms in a learning environment of their choosing. e-Extension will establish access points to a common, yet personalized and localized, reservoir of information which has been synthesized from thousands of helpful sites. It will empower customers to broker their own information. e-Extension will assemble teams of national experts from within the land-grant system to develop, review, and package the content in multiple formats. For customers, the value will be personalized, best of the best, validated information that addresses their specific questions, issues, and life events in an aggregated, non-duplicative approach.

Learning Options. The customer environment will give current and future customers the ability to use a broad range of knowledge anywhere and anytime through common multiple points of access that are easily available. Knowledge will be packaged and delivered based on more specific customer demand, allowing for easier consumption and reduced duplication. The site will include basic information, FAQs, Ask the Experts, collaborative space, chat and forum opportunities, live events, decision tools, distance diagnostics, conferencing and video, individual and sequenced learning modules, and courses and certificate programs. This information can also be useful in supporting graduate and undergraduate instruction.
Technology Supported. The technology environment is characterized as customer-driven, accessible, evolutionary, flexible, easy-to-navigate, expansive, competitive, integrated, objective and comprehensive, and standards-based. It will create new communities of interest leading to new funding opportunities. Profiling technology deployed by e-Extension offers direct feedback concerning the quality of information and directions for improving the next iteration of content packages to better meet customer needs. This user information will be instructive about research needs of current and new communities of interest.

Faculty and Staff Benefits

Staff Support. Benefits to Extension and its clients includes such items as: 1) ability of staff to spend more time on value-added, one-on-one, or “transformational” education because less time will be spent on routine tasks, 2) enhanced ability to fulfill customers’ requests, and 3) reduced time spent searching for information due to personalization, search features, and self-service tools on e-Extension.

Customer Service Options. e-Extension is a way for customers to ask questions independently at their convenience allowing educators more time for individual and group educational priorities. e-Extension will assist states that do not have a full complement of specialists in specific subject areas and specialist knowledge will be shared nationally through content development, Frequently Asked Questions (FAQs), and Ask the Experts. e-Extension will allow for a faster and more complete search of high quality information, saving time for other higher priority tasks.

Multi-State Collaboration. University investments in e-Extension will help states meet the Agricultural Research, Extension and Education Reform of 1998 (AREERA) section 204 requiring a specific amount of agricultural research and Extension formula funds be expended on integrated research and Extension activities.

Management

Governance and Management. e-Extension will function through a centralized organization composed of a board of directors appointed by ECOP, a content management board, at least four advisory committees (internal and external customers, technology and strategic partnerships), and a core staff. Content Development Teams (CDT), managed by e-Extension staff and CDT program leaders, will identify and develop content on behalf of communities of interest that may include such areas as food safety, homeland security, home and garden, health/obesity, childcare, pest management, financial security, and sustainable agriculture.

Efficiency Improvements. Three major factors will contribute to e-Extension’s value – increased efficiency and effectiveness of: 1) knowledge searches and information organization, 2) customer service, and 3) training of Extension educators and state specialists. The increased customer service category is the most important contribution,
accounting for 54% of the total benefit annually, and the search efficiency category accounts for 31% of the total benefit annually.

Risk Mitigation. Risks to mitigate to ensure the success of e-Extension include: 1) flexibility of staff and technology to adapt and learn to respond to user needs, 2) legal policy concerning intellectual property rights, 3) security and privacy of end users and employees, and 4) buy-in from administrators, specialists and educators.

Investment and Return

Investment. e-Extension will require an additional $43.9 M over the next five years or an average annual cost of $8.78 M with primary costs in three budget categories: 1) content development and technology support (54%), 2) hardware/software infrastructure and support (38%), and 3) management and administration (8.0%). These estimated costs do not include in-kind contributions from state Extension Services required to populate necessary content development teams that will provide information packages for possibly hundreds of current and new communities of interest.

Return on Investment. The financial analysis shows a positive net present value (NPV) of $78.9 M and return on investment (ROI) of 188% and a Benefit-Cost Ratio (BCR) of 2.88. Any investment with a positive NPV is economically justified as it will add to the net assets of the organization. A ROI of 188% means that each dollar invested in the system recovers the initial investment and earns an additional $1.88. Therefore, the Benefit-Cost Ratio (BCR) is 2.88 meaning that one dollar invested provides nearly three dollars of benefits. The payback period is reported as 2 years with positive fiscal benefits beginning in year 3 of the project.

Financial Value. e-Extension will generate financial value in three ways: 1) increase the efficiency and effectiveness of Extension educators and state specialists, 2) eliminate redundancy within existing and future Internet technology systems, and 3) increase revenue from customer fees. These categories produce an estimated $43.0 M in financial value annually. The increase in the efficiency and effectiveness of educators and state specialists is the most important contribution accounting for 88% of the total benefit annually.

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e-ExtensionProject.Info Information about the e-Extension initiative can be found at this URL
e-Extension Pre-Select Business Case

1.0 The Opportunity

1.1 Project Description

The Cooperative Extension System (CES) is a national educational network designed to extend the research-based knowledge and education of land-grant universities (LGUs) to the public, encouraging individuals to use this information in making useful, practical decisions in their daily lives. The CES is a partnership including the Cooperative State Research, Education and Extension Service (CSREES), an agency of the United States Department of Agriculture (USDA); 106 LGUs in every state and territory, including 17 historically Black and 31 Native American institutions; and more than 3,100 county and city Extension offices. The CES mission is to “enable people to improve their lives and communities through learning partnerships that put knowledge to work.”

CES, along with other components of LGUs and CSREES, are cooperating to build a national e-Extension system. e-Extension is an online information and education network that provides public access to LGU expertise. The vision of e-Extension will supplement the existing Extension network and address its current shortcomings.

e-Extension will become a national Internet-based information and education network for current and new Extension customers. Through the e-Extension system, CES will more efficiently serve customers by providing accurate, up-to-date information for use anytime, anywhere.

The benefits of this effort include immediate access to non-duplicated, research-based information provided by the entire LGU system, including resources about agriculture, communities, youth, families, natural resources, and related areas. Through the system’s easy access, research will have greater application and value to a broader array of customers. e-Extension will discover, establish, and promote new and traditional communities of interest based on issues such as food safety, water security, homeland security, lawn and garden, financial management, community development, small business management, medicine, and health and obesity.

e-Extension will be a centrally managed, but locally delivered state-of-the art, full-service program that will use technology and new organizational processes to do the following:

- Enhance accessibility and quality of relevant knowledge for existing customers, partners, and Extension educators
- Expand access to new customers with an emphasis on the underserved (minority groups, Americans with Disabilities Act groups, language, etc)
- Expand the breadth and depth of content accessible at the 3,000 county offices
Foster collaboration across the Extension network by creating communities of practice
Reduce redundant technology expenditures
Reduce redundant development of educational materials
Continually adopt and employ new technology to help customers acquire and apply knowledge to improve their quality of life

Guided by customer needs, e-Extension plans to involve other aspects of the LGU system that have not traditionally partnered with Extension, such as medical and business schools, businesses, community colleges, and nonprofit organizations. The availability of research-based knowledge focused on individual, family, and community issues and needs, including nonagricultural content in areas such as health and law, will enrich the lives of customers. e-Extension will use a variety of rich multi-media formats to package information in ways that make it easier to use, consequently leading to a better educational experience.

The e-Extension vision aligns with the President’s Management Agenda, the eGovernment Act, and USDA’s eGovernment program. It seeks to use technology effectively to deliver information and services in a customer-centered manner. Additionally, by providing e-Extension to 3,100 extension offices across 50 states and territories, the program reduces the finances and time spent on redundant tasks and allows for higher quality face to face interaction on more complex and higher priority issues.

The Internet is not just a tool for information gathering; it is changing the way individuals seek information. This transformation unlocks the future for the Extension program to serve a more diverse emerging customer base, build a broader constituency, and make objective, trustworthy answers to life’s issues available at any time or place from a trusted source -- CES.

One prime example of the impact e-Extension can have on the community is in the area of the family. An increasing number of parents who can access quality information on parenting and child issues will lead to stronger, healthier, more balanced children and more mature adults. Another example of Extension’s impact occurs when farmers and gardeners learn to use the right pesticides and amounts of fertilizer for their plants, reducing potential toxins in the ecological system. e-Extension will provide quality knowledge in more accessible and aggregated forms to more individuals, which will then improve the quality of life for the communities as a whole.

The increasing accessibility of the Internet and new information technologies offers CES and its partners a clear opportunity to reinvent the ways it serves customers. By providing information, facilitating in-depth learning, and supporting educational transactions with communities of interest, e-Extension will allow the 106 universities and colleges and 3,100 county-based offices to better serve customers in the way customers want to be served—anywhere, anytime. e-Extension transforms the historic delivery model to a 21st-century Extension delivery model. Extension has the unique opportunity to incorporate the more effective and efficient development and delivery of educational materials as a
complement to Extension’s excellent face-to-face instruction. Extension educators also will have more resources for their own program development and implementation.

1.2 Business Problem Addressed

Extension has spent decades packaging, interpreting, and extending the results of research to help people understand the need for research and how to apply it appropriately to their own situations. This has been most evident in the area of helping to produce the safest, most abundant, and most affordable food in the world.

As the Extension program and society as a whole have evolved, many customers are not aware of the services offered by Extension personnel and have limited access to Extension programs and the knowledge they need. Information technology has created access to quality information, expertise, and learning opportunities that were not realistic in the traditional delivery model. The goal of e-Extension is to use technology to create a national knowledge and education network for Extension customers, partners, and employees.

Through LGUs and county-based offices, Extension provides information and education to a wide spectrum of communities. Current Extension program methods include telephone and personal consultation, public presentations, demonstrations, workshops, publications, computer networks, satellite and video technology, newspapers, radio, and television.

Faced with recent trends of shrinking budgets, reduction in personnel, and the need to restructure the system to more effectively reach new customers while improving service to traditional customers, the Extension program continually faces disadvantages in attempting to fulfill its mission. Extension offices across the country have varying levels
of expertise in different areas, and many deal with limited resources to address specific needs that arise. A customer’s interaction is primarily with his or her county-based Extension office with limited access to other offices across the state or country. Personnel reduction has also hampered the Extension program from serving a broader audience.

Although in recent years many larger Extension offices have started using information technology to complement the traditional service delivery model, Extension leadership recognizes the overall lack of effective use of technology to compete in the current marketplace and to address current and future Extension challenges.

Additionally, as is true in most industries, the evolution of technology has resulted in an explosion in the amount of information available to customers. The U.S. Department of Commerce issued a report indicating that more than 50 percent of America’s families have Internet access (September 2001). Also reported was an astounding 93 percent of individuals ages 9-17 who use the Internet. This indicates Extension must gear up to provide high-quality Internet-based information for its next generation of customers. With an increase in the amount of information comes the need to manage and understand that information effectively. Cultural and technological changes are quickly outpacing the traditional Extension Service delivery model.

2.0 Value Proposition

2.1 Why e-Extension?

When using e-Extension, customers will have access to trustworthy, balanced views of specialized packages of information and education, 24 hours a day, 7 days a week, 365 days a year. This information will assist customers in making positive decisions affecting their prosperity and quality of life.

Customers will be able to access information on their terms in a learning environment of their choosing. Multiple learning formats--from “newspaper style” quick answers to online in-depth interactive educational programs--will allow customers to access the resources of the LGU system and determine the depth of knowledge desired. e-Extension will establish access points to a common, yet personalized and localized reservoir of information which has been synthesized from thousand of helpful sites. It will empower customers to broker their own information. E-Extension will assemble teams of national experts from within the land-grant system to develop and review content areas which are offered in multiple formats. For customers, the value will be personalized, best of the best, validated information that addresses their specific questions, issues and life events in an aggregated, non-duplicative approach. By empowering the customer, e-Extension will streamline access to information, making it easier than ever to work with universities.

Teams of national experts or Content Development Teams from within the LGUs will develop and review the content areas. The information will reflect the current body of knowledge within each area and the best answers available from state-of-the-art research.
As a result of content organization, aggregation, and review, customers will also enjoy a reduction in the time it takes to gather dependable, non-duplicated information.

A description of specific benefits to each major stakeholder of the e-Extension initiative follows.

Benefits to Customers:

- Quick access to trustworthy university-based research information that is organized and aggregated for making informed, educated decisions in any setting.
- Local contacts available for follow-up, application, and more in-depth learning.
- A full spectrum of information and learning opportunities that have been organized and reviewed to enhance speed and ease of use.
- Increased availability of high-quality, non-duplicated information along with a vast information network.

e-Extension will provide the vehicle for integrating content across all LGUs, using portal technology to create a seamless channel without having to disrupt important state and local organizational structures.

e-Extension will make new partnerships possible, open up new opportunities, and potentially create new sources of revenue. Substantial efficiencies will be available through the capabilities of the enterprise portal -- greater segmentation of customers, increased self-service, and better multi-state Extension program coordination.

Benefits to Land-Grant Universities:

- Obtain new sponsors and public/private partnerships because of cooperation and national availability of non-duplicated resources.
- Provide a foundation of collaboration among LGUs that will further enable the delivery of information, educational programs, and technical assistance.
- Serve current and new customers with accurate, timely information for decision-making.
- Provide an effective avenue for extending research results from all elements of LGUs.
- Enhance multi-state collaboration through the communities of interest that will be responsible for the content.

e-Extension complements a traditional, currently understaffed system with one that increases education and focuses on more significant, meaningful, and complex public issues. The e-Extension program aligns with the principles of the President’s Management Agenda and makes “Expanding Electronic Government” one of five major initiatives for reforming government within eGovernment. e-Extension leverages the Internet to deliver value to the customer, yield efficiencies, and reduce costs to institutions. The e-Extension solution is the next logical step in meeting the needs of
customers by providing information and transformational learning to all communities of interest. e-Extension will increase the availability of information throughout the nation by aggregating content, providing more immediate service to customers, and providing a cost savings to individual participating states.

Within e-Extension, Extension educators also have an active role in facilitating community education efforts by bringing together various community interest groups to help resolve community issues. By initiating and organizing communities of interest online, educating groups on undisputable scientific or research-based principles related to the issues they are trying to address, and then helping groups learn from and understand each other, Extension educators are contributing significantly to growth and education in their communities.

Benefits to Federal, State, and Local Governments:
- Involving government organizations that have not traditionally partnered with Extension
- Serving an expansive audience including the non-English speaking communities and customers with disabilities
- Increasing ability to focus on creation/customization of local content and educational programs

USDA:
- Support the goals of the USDA e-Government strategy, including improved quality and consistency of information across the enterprise
- Collaboration of Extension within USDA (NRCS, Forest Service, Rural Development) and other agencies will improve the quality of information and education provided to customers
- Develop better integration and relationships with other USDA agencies as well as other Federal departments and agencies
- Enhance partnership with the 106 LGUs (USDA is the largest cabinet level department that has this association with LGUs.)
- Connect the government with customers in a nonstop, high-tech model, complemented by the expertise of 3,000 local Extension offices

A summary of the Extension value proposition in terms of strategic, financial, and operational measures is outlined below.

Strategic Measures
- Increases customer satisfaction
- Expands reach to more customers, will emphasize the underserved
- Enhances the quality of information through communities of interest
- Enhances the breadth of information available (business, medicine, etc.)
- Enables the Department’s strategic goals, Secretarial, and/or Presidential priorities
Financial Measures

- Reduces the cost of each customer transaction performed in the existing system
- Reduces expenditures on redundant system components
- Eliminates costly, outdated technology solutions
- Helps compensate for reduced staff through the “workforce multiplier” effect

Operational Measures

- Decreases processing and cycle time from inquiry to fulfillment
- Improves collaboration and integration across the Department or with business partners and among employees across state boundaries
- Decreases employee time spent on informational requests versus transformational programmatic activities

3.0 The Current and Future Environment

3.1 The “As-Is” Environment: The Current State of the Extension Program

Currently, the Extension program focuses largely on accommodating millions of contacts made by customers and partners at the state and local levels. The Extension program audience includes agricultural producers, consumers, suppliers, and processors; youth; families; and community and economic leaders. Extension also partners with CSREES, state and local governments, and LGUs, as well as with other USDA and federal agencies.

Extension offices provide the majority of the support, information, and collaboration for customers and partners. Interaction between Extension and its customers comes in various forms: local publications, local Extension educators and state specialists, phone calls or visits to the local Extension office, or, if available, visits to the state/local Extension website.
Customers, partners, and Extension educators have varying degrees of access to information, based on their geographic location or knowledge of the total Extension program. Customers generally have access to the knowledge, experts, and facilities their local Extension offices have. For example, customers located in an area with more sophisticated technology in their Extension office have access to more information than those who are located in small, rural county offices that lack resources and funding for that technology. Often, knowledge available at other Extension offices would be more helpful or relevant to a customer’s request, but it is not available to that customer and the value is lost because the technology link is not present.

Local Extension educators are also faced with multiple customer requests that are similar in nature, resulting in loss of time devoted to providing routine information repetitively. e-Extension will be useful in providing frequently used information, which frees up Extension educators’ time for more complex questions customers may have.

3.1.1 The “As-Is” Customer Environment

In the existing Extension environment, customers are becoming increasingly limited in access to information due to a reduction in the resources available in Extension programs in most institutions and states. Customers currently go to Extension for courses and certifications, fact sheets, publications, and answers to FAQs. Areas of knowledge focus around communities, food safety, nutrition and health, youth and family services, horticulture, and agriculture-related topics.

Customers can also access knowledge via noncredit classroom courses their local offices offer or by contacting state specialists at universities or through media such as newspapers or websites. Many customers rely on their network of personal relationships with Extension employees to receive information. The information exchanged is not tracked or monitored, so it is not necessarily accessible to the public. At times, a customer’s request is lost, requiring the customer to follow up and potentially interact with a new individual, which will require additional time.

Occasionally, Extension educators or state specialists with a certain subject area are not equipped to respond to requests in areas outside their specialties. The educator or specialist will then spend time and resources researching the topic, creating a delay in response to the customer. The customer could interpret this delay as a lower quality experience, which could lead to decreased use of the Extension system. Customers now have more options of where to seek knowledge outside Extension; however, these alternative sources generally have a biased perspective or product to sell. The multitude of information currently available on the Internet from known and unknown sources with questionable validity creates a problem for the customer. Customers with questions, issues, or crucial life events do not want to search the Internet and find thousands of documents full of questionable and duplicative information. They want an immediate, understandable answer to their situation, and they want answers on which they can
depend. Further, it is helpful for a local contact to follow up with the individual to enhance the learning experience and to aid in applying the information.

3.1.2 The “As-Is” Employee Environment

The approximately 17,500 full- and part-time Extension employees include Extension educators, state specialists, administrators, and approximately one-third of the CSREES staff. These individuals are responsible for answering and maintaining customer requests and relationships at state and local levels, while also maintaining scholarly and daily management responsibilities. Many Extension specialists and some local Extension educators engage in research and publish their findings to achieve promotion and tenure while assessing needs, developing programs, and fulfilling customer requests, expectations, and relationships.

Extension educators are spending an increasing amount of time seeking external funding sources and writing grants to support new ideas and programs. Effective Extension youth and family professionals are responsible for conducting research in youth and human development and research that supports effective program development, implementation, and evaluation. They assess needs of youth, families, and communities and establish community collaborations to develop educational programs to meet critical needs. They continually cooperate with other organizations to maximize program effectiveness, quality, and sustainability.

The “as-is,” or current environment for the Extension educator includes planning and presenting educational programs. Educators spend as much as 75 percent of their time reacting to and answering customer questions brought to the local office. Offices are inundated with calls and requests from many customers who often have similar inquiries. These daily requests require time for research and communication about specific issues, time that could be used instead for value-added tasks and in-depth learning efforts.

Customers in the community sometimes contact state specialists with routine questions, but more often it is local Extension educators contacting specialists for assistance in answering a particular inquiry. Since state specialists have many other responsibilities, such as developing curriculum and professional development and training of field staff, they usually do not answer customer questions directly. So customers who do call the university directly are sometimes neglected, resulting in decreased customer satisfaction. On many occasions, the response time to the customer is longer than expected, resulting in either lower customer satisfaction or a lower quality response with a higher turnaround. This delay may be because of travel or other assigned duties. Also, because of budget pressures resulting in decreasing personnel numbers, most states do not have a sufficient number of state specialists, which contributes to the growing problem of providing timely, accurate answers to customers’ questions.

Extension employees also rely on their personal networks when developing educational programs and answering customer questions. These relationships and exchanges are not formally recorded or organized and shared, so knowledge discovered during these
exchanges is lost unless explicitly captured by the participants. The vast human resources and knowledge capital available to employees through e-Extension would let them create high-quality educational materials and programs with less effort and less duplication. As world issues and life events become increasingly complex, Extension educators must become more specialized in their subject areas to assist the customers. Thus, educators cannot cover the range of subject matter areas they once did.

In recent years, Extension educators have worked to include in their programs underserved audiences such as immigrant populations, military youth and families, low-income populations, and people in the judicial system. This has required new approaches, materials, and technologies. These various demands prevent educators from having time to focus on core business problems that contribute to the process of lifelong learning and improving quality of life because of expanded personal education. Additionally, large amounts of paperwork place a great demand on educators’ time.

A primary role of the local Extension educator is that of a community liaison--helping to identify needs and opportunities and developing educational programs in response. Educators spend much of their time in the community and are the “face” of Extension and the university to local customers. Managing and supporting volunteers, involvement with local 4-H and other Extension programs, and educating customers are the means by which Extension educators maintain this key community relationship. Extension educators build volunteer systems and train volunteers to implement local programs and ensure their sustainability. They develop training programs for youth, adults, volunteers, and other staff. They develop and conduct program evaluations and write and distribute reports on program impacts. A substantial number of Extension educators work on national committees and share resources across states. For example, the National 4-H Jury involves Extension educators across the country in the peer review of 4-H youth development curriculum that must meet research and quality standards. Extension educators serve on juries and boards and submit resources. The e-Extension network of educational information would let local Extension educators be much more efficient and enable them to focus on higher-level transformational learning.

3.1.3 The “As-Is” Technology Environment

The current Extension Internet presence includes multiple state and local websites with varying degrees of sophistication and quality, scope and relevancy. These sites do not work with each other and may contain repetitive or out-of-date information. States with larger Extension programs often have more invested in their websites because of a greater overall budget as well as a priority placed on the importance of technology. The larger Extension programs are more equipped to follow the growing wave of technology, creating a gap with smaller Extension programs with less funding, smaller budgets, and fewer investments. Many states with smaller Extension programs do not have equal access to information because of this technology barrier. Another challenge related to “as-is” technology is that many states use varying platforms and data standards, which makes data sharing difficult among Extension programs.
3.2 The “To Be” Environment: The Vision of the e-Extension Program

The e-Extension vision is to use technology to organize and distribute the wealth of streamlined, customer-centered, packaged, ready-to-use knowledge to customers and partners across the Extension network. e-Extension will provide tools to help customers quickly find, understand, and apply quality information, as well as interact with teams of experts and other customers who share similar interests. e-Extension seeks to provide unprecedented access to explicit knowledge, via documents and multi-media, and tacit knowledge straight from the mouths of experts.

e-Extension will be a nationwide, locally delivered, full-service system offering valid, non-duplicated, trustworthy information and education tailored to the unique needs of the individual. The network, which makes the total land-grant system accessible, will make information more readily available while greatly enhancing its quality and delivery. e-Extension will allow 3,100 local Extension offices to offer their customers a range of formats from quick answers to more complex educational experiences. Tools will include synthesized, topical information, frequently asked questions, an “Ask the Experts” resource, diagnostic tools, individual and serial learning modules, modular series, and more comprehensive programs and courses.

As shown in the diagram above, e-Extension will provide customers with common, multiple points of access to a suite of tools and capabilities. The foundation of the project consists of qualified experts in identified content areas, knowledge content items, state and local data sources, and knowledge discovery and delivery tools. Customers can
interact with the content, content experts, and other learners in "communities of place" and "communities of interest." Qualified and packaged knowledge content items will offer the highest quality, the least duplication and the most easily accessible information. e-Extension will also serve as a gateway to state and local repositories and information. Knowledge discovery and delivery tools will aid customers in decision making.

Innovative technology will continuously be applied to the e-Extension system to help customers by offering the latest in information and technology. This will be aided by the separation of the content management function from the delivery function. A separate Content Management System will allow quick, single-site updating of information, producing multiple formats and uses for that information. The separate delivery function will allow constant tool upgrading for accessing the system from desk and laptop computers, cell phones, PDAs, and whatever technology may become available in the future.

3.2. The “To-Be” Customer Environment

e-Extension will give current and future customers the ability to use a broad range of knowledge anywhere and anytime through common multiple points of access that are easily available. Current customers can go to one nationally recognized Extension source for reviewed and validated knowledge and expert information. Creating a national e-Extension system brand along with university and county office brands will help strengthen awareness of the Extension program and its local participants while broadening the customer base and reaching customers who would have been lost or not identified (language, ADA, culture, minority, etc.) in the current delivery model.

Customers can locate the quality information they are looking for as well as additional information that might be of interest. Knowledge will be packaged and delivered based on customers’ needs, allowing for easier consumption and reduced duplication. Extension staff will have a greater body of information available for their customer programs.

Customers can also collaborate with Extension educators, allowing for exchanges in thoughts and ideas and improving the overall customer experience. Personnel who might not be available to the customer at the local Extension office will be available to deliver a quality response through e-Extension. e-Extension will also act as a gateway to state and local sites and offices for customers who require further help. Customers will experience higher quality and faster support from local Extension educators who are equipped with the e-Extension system.
e-Extension customers will have the means to contribute to the knowledge system by providing feedback on the information they received. Their feedback will improve the learning experience, give customers a sense of ownership in the Extension network, and verify that content has been used successfully.

Extension knowledge will be available in a multitude of formats, from “newspaper type” fact sheets to multi-media to diagnostic tools to full-credit online courses. e-Extension will also cater to non-English-speaking customers. The availability of more content to customers, including nonagricultural content in areas such as nutrition, business, health, and law, will vastly help individuals improve their quality of life.

3.2.2 The “To-Be” Employee Environment

Since e-Extension customers will have a way to ask questions independently at their convenience, Extension educators can spend more time on individual and group educational priorities. Extension educators and state specialists will be identified as “experts” in their communities of practice. This will ensure quality content and align educators’ and specialists’ skills and interests with value-added work for Extension. Educators and specialists will also be allowed to work more in their areas of expertise and will have greater resources at their own disposal.
The e-Extension system provides Extension office paraprofessionals and support staff with a point of referral to field questions from customers that would otherwise have been handled by an Extension educator. e-Extension provides an easy resource for other staff to answer questions that don’t require an educator’s expertise. These e-Extension educators who continue to interface with customers will be able to use e-Extension to better serve customers and accomplish their mission through access to quality information, national coordination of content delivery, and increased collaboration with experts and colleagues. Extension educators can use the e-Extension system as a reference tool for developing educational materials for their current jobs. The system, through an intranet function, will facilitate staff improvement by including high-quality, non-duplicated staff development packages for Extension employees’ professional improvement. In addition, the intranet will house collections of images, such as photos of plant diseases or insects, and instructional documents, such as slides, lesson plans, and teaching techniques, that local Extension educators can share as a combined work effort. It will also provide collaborative space for the work of content development teams during the development and review process.

e-Extension will especially assist states that do not have a full complement of state specialists in specific subject areas. State specialists’ knowledge will easily be shared nationally, and states that do not have specialty expertise in a certain area would have increased access to that expertise through e-Extension.

The e-Extension system will use collaboration and coordinated content creation to minimize redundant content and to speed delivery, allowing Extension educators to draw upon greater resources with increased access to information. Collaboration will also foster a national feeling of community among Extension educators. This capability allows colleagues who would normally not interact to develop relationships for continuous learning. The exposure e-Extension facilitates among educators will enable national recognition for previously unknown local or state projects and research and will aid in marketing Extension to corporate and government partners and sponsors.

State specialists and Extension educators will contribute content to the e-Extension system. Using technology tools, the contribution process will enable efficient development, organization, review, approval, and cataloging of information before making it available to customers. This role is critical because the value of the e-Extension system lies in providing accurate and aggregated information in a timely and personalized manner. The intranet and the administrative staff will facilitate participation of experts in multi-state teams so that educational materials will be accurate and constant assistance is available.

3.2.3 The “To Be” Technology Environment

e-Extension will provide all customers with educational information based on the solid foundation of scholarship and research and will be driven by customer needs, such as the need for information in multiple languages. The goal of e-Extension is to give customers easy access to content items and learning materials through capabilities such as Internet
searches, an “Ask the Experts” resource, distance diagnostics, decision tools, and other elements. The e-Extension system will be available via desktop, laptop, PDA, phone, print media, and other avenues.

e-Extension will also provide the ability to interact with the content, content experts, and other learners in "communities of place" and "communities of interest" through virtual collaboration media such as discussion forums. Customers can create their own learning space that is responsive to their unique needs for the latest information on selected topics. Additionally, they can contribute to the knowledge base by identifying emerging needs for research, reporting on applications, and proposing alternative solutions. The system will also serve needs assessment and accountability functions by collecting information that customers are willing to provide.

The system will support positive relationships among customers, state and local Extension offices, partners, and educators. Comprehensive learning modules and online certification courses will be distributed via the system, as well as the transactions required to process fee-based learning capabilities.

The e-Extension system will continually seek to apply innovative technology in improving customers’ quality of life. Tools will empower the customer to make decisions quickly during various life events.

Unlike many Internet sites, e-Extension will provide customers with content that has been assembled with in-depth understanding of customer needs and interests. Content will be current for specific given location and will be delivered a variety of formats. Customers will see the most relevant information for their needs and will not have to review massive amounts of content to find an answer, although they will not be limited in accessing more in-depth information.

A table summarizing the key “to-be” characteristics of the e-Extension initiative is set forth below:

<table>
<thead>
<tr>
<th>e-Extension Characteristics</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-Extension will be customer-driven.</td>
<td>A customer-driven process addressing needs of potential communities of interest beyond current audiences.</td>
</tr>
<tr>
<td>e-Extension will be accessible.</td>
<td>A single access source for information, educational opportunities, and learning modules developed from LGU expertise.</td>
</tr>
<tr>
<td>e-Extension will be evolutionary.</td>
<td>An evolutionary process involving numerous simultaneous experiments.</td>
</tr>
<tr>
<td>e-Extension will be flexible.</td>
<td>Quickly compiling expert response teams flexible enough to move rapidly in addressing customer needs.</td>
</tr>
<tr>
<td>e-Extension will be easy to navigate.</td>
<td>A customer-driven, Web-based navigation system that provides easy, seamless access to useful information.</td>
</tr>
<tr>
<td>e-Extension will be expansive.</td>
<td>Based on openness, allowing multiple points of view in</td>
</tr>
</tbody>
</table>
A technology framework was developed as part of the business case to identify the different short-term and long-term components of the “to-be” technology environment. This tool will be used as input in the design process of the e-Extension solution, describing the components of e-Extension in support, access, delivery, and content categories.
**4.0 How will the opportunity be developed and operate?**

**4.1 Establish Project Governance and Management**

**Governance**

e-Extension will function through a centralized management entity. The management staff will manage core internal functions and coordinate leadership for a large number of decentralized multi-state Content Development Teams, advisory committees, and
workgroups. The staff reports to a director who is responsible to a board of directors appointed by ECOP.

e-Extension is one aspect of the larger national education system of CES, which is composed of the Extension Services at 106 state LGUs. In most cases, the Extension organizations are in partnership with counties or parishes at the local level and with CSREES/USDA at the federal level. At the state level, governance for Extension is imbedded in the state institutions of which it is a part. At the national level, Extension directors are represented in the Extension section of the National Association of State Universities and Land-Grant Colleges and elect its policy representatives, the Extension Committee on Organization and Policy (ECOP) members, which also has input from CSREES/USDA.

It is proposed that e-Extension operate under the legal umbrella of ECOP or an appropriate 501 designation created by ECOP and be responsible to a board of directors appointed by ECOP. The board will establish e-Extension policy direction that enhances the total Extension program and efficiently meets the needs of customers in ways that promote modern information-seeking behavior.

The e-Extension board of directors will include the following:

- director/administrator representative from each of the five Extension regions,
- representative nominated by the CSREES administrator,
- 4-H member under the age of 19,
- non-Extension representative from the private sector,
- Extension administrators from the program leader level, one of whom is subject-matter oriented and one who is focused on information technology/communications support,
- research representative,
- resident instruction representative,
- 1994 tribal colleges, and
- Hispanic Serving Institutions.

ECOP may add other board members, but the majority should be Extension policy-makers, since e-Extension will significantly impact Extension in general. The 3-year terms will be staggered.

The executive director will lead a team with combined skills in finance, marketing, information science and technology, instructional design, content management, and law. This staff will coordinate and manage the e-Extension effort through a number of advisory councils, CDTs and Community of Interest program leaders, and technical support groups whose leadership and guidance will help create excellent content and coordinate the multi-state efforts of numerous LGUs and faculty.

**Operational Procedures**
e-Extension will be centrally managed so educational materials can be developed according to standard, accessible formats. But the success of the system depends largely on leadership and participation from the state Extension systems in which the intellectual capital resides. Consequently, programmatic leadership will be distributed throughout the participating LGUs and will become operational in multi-state teams of subject-matter specialists led by Community of Interest program leaders.

The following flow chart displays functional relationships of e-Extension within the total Extension system, and the description below outlines operational procedures.

### Advisory Committees

The executive team will work closely with advisory committees to ensure that e-Extension is meeting the needs of customers, remains current with technology, has the highest quality content, and evaluates strategic partnerships. Each of these advisory committees keeps the project focused and responsive.

#### Customer Advisory Committee (External Customers)

e-Extension is designed to meet the needs of Extension’s customers, who want trustworthy information that responds to life events in the situations they face. This committee will consist of external customers. The focus will be examining customer...
statistics, assessing community interests, and analyzing customer profiles and usage and need information for program improvement.

**Extension Educator Advisory Committee (Extension Staff Users)**
e-Extension will organize an internal customer’s advisory committee with rotating membership composed of Extension state and field staff. While the board of directors provides policy direction consistent with the total Extension program, it will be important for policy development and operational procedures to take into account the guidance that can be gathered from Extension educators and specialists.

**Technical Advisory Committee (Technology Support Systems)**
With a system that greatly depends on being “fed” via multi-state teams of educational content developers, it will be important to solicit guidance on information technology direction and decisions from experts in those states. Staff will organize a technical advisory committee with rotating membership composed of Internet technology, instructional design and communication professionals from Extension to provide this guidance. This committee will also identify state-of-the-art technology and evaluate the effectiveness of the technology being used by e-Extension.

**Marketing and Strategic Partnerships (Evaluation of Strategic Partnerships)**
e-Extension will have an enormous amount of intellectual property that will be valuable in the marketplace. Numerous opportunities will need to be examined to identify key strategic partnerships that will bring value to e-Extension and not compromise its standards. An advisory committee will work with the director and marketing leader director to ensure a strategic position in the marketplace. In addition, extensive internal and external marketing is needed to build the brand identity.

**Community of Interest Program Leaders and Teams**
At the programmatic level, leadership will be provided by Community of Interest program leaders who are selected from the Extension system and employed by e-Extension. Most individuals will need to devote full-time to program leadership for e-Extension and other issues related to Extension programming in the communities of interest. As many as 10 communities of interest may be operating simultaneously. Examples of communities of interest may include food safety, health, and homeland security.

These program leaders will facilitate the organization and operation of CDTs within their particular communities of interest, whose members will be provided by state Extension services and will include subject matter specialists and technology and instructional design personnel. They will perform the functions listed in the chart shown above.

Content teams may be formed in response to user market analyses, expressed needs (that may depend on in-kind state-supported funding), or they may be self-forming because of interests and needs of individuals or multiple states. CDTs may also be formed to respond to competitive funding opportunities. In any case, to be recognized as a legitimate team,
they must conform to and address the technology and content development standards, ensure the proposed curriculum activity is based on customer needs, appropriate use of technology and instructional design support, and avoid the issue of duplicative work by multiple teams. In addition, this will make the effort visible so personnel from other states may participate if they desire.

Content development teams:

- collect need assessment information, including customer input to determine what the customer really wants and needs,
- develop the curriculum framework,
- take inventory of existing educational objects,
- develop new material if needed in multiple formats (FAQs, fact sheets, modules, etc),
- repackage information based on customer needs and keep it current,
- coordinate the Ask the Experts function
- monitor usage through customer profiles, and
- design new content to replace those not being used by the customer, and
- provide other leadership related to Extension programming in their content area.

The community of interest program leader and executive director will ensure the content development teams have access to expertise in the following areas, either as team members or consultants: market analysis, needs assessment, instructional design, media creation, Web design, meta-data, graphics, programming, video, audio, photography, writing, editing, and evaluation. Extension educators and state specialists who prepare content under contract to e-Extension may subcontract for technical support services at their host institutions. All technical support services must adhere to the standards and protocols established for e-Extension.

Content development teams will focus on creating and identifying resources, curricula, decision-making tools, and collaboration tools, including the following components:

- Frequently asked questions
  - Identify questions
  - Prepare responses

- Ask the expert
  - Identify experts
  - Assign schedule

- Forums
  - Identify topics
  - Assign moderators

- Live events
  - Identify topics
  - Assign faculty and staff

- Diagnostics
  - Identify topics
  - Assign faculty and staff
- Courses
  - Online instruction
  - Collaboration tools
  - Internet-based courses
- Resources (publications, media, etc.)
- Modules
- Decision tools
- Simulations

**Content Management Board**

A content management committee will act as an editorial board reviewing the whole package before posting. This committee will provide coordination across communities of interest, qualify materials, assure proper credit to authors and institutions, and manage collections of resources. Qualifying materials includes conducting review processes of peers and customers, screening for appropriate meta-data, providing feedback to authors, and other related actions. The content management board will include the community of interest program leaders, e-Extension staff, and necessary instructional design and technical support personnel as needed. This committee has the ultimate responsibility to ensure that e-Extension has the best and most trustworthy content for our customers. Their roles will include the following:

**Qualify Materials**
- Customer review
- Screen meta-data
- Provide feedback to authors on review of materials
- Maintain records on review of materials
- Peer review
- Credit to authors
- Credit to institutions

**Manage Collection of Resources**
- Propose new resources
- Purge resources

The e-Extension executive staff provides the day-to-day continuity and coherence to the common initiative. The executive staff’s responsibilities include the following functions:

**Executive Director**
- Provide leadership to the national e-Extension effort
- Oversee the executive staff
- Monitor projects and reports to the board of directors
• Build relationships with Extension directors and administrators
• Build relationships with current and new partners
• Develop the overall peer quality assurance and review teams
• Set criteria for peer review panels that must include diversity of participants based on geographic location, size of university, and other factors
• Include representatives from 1862, 1890, 1994, HIS, research, resident instruction, youth customers, Extension educators, and state specialists as appropriate
• Develop RFP (Request for Proposals) process for recommended funded topic areas
• Select peer review panels and manages process

Finance
• Manage the financial obligations of the enterprise
• Allocate funds and oversee RFP process
• Provide cost/benefit analysis for strategic partnerships and efforts
• Provide cost accounting for communities of interest and value obtained
• Ensure proper accounting of all funds and fiscal compliance with grants and contracts

Marketing
• Conduct or oversee needs assessment
• Develop the marketing strategy for e-Extension
• Understand the needs of customers, internal customers, and stakeholders
• Explore strategic marketing partnerships and opportunities
• Recommend market segment pricing of fee products
• Analyze customer profiles to recommend improvements

Content Management
• Organize and coordinate the content teams (with COI-PLs), technical support teams, and technology projects to ensure timely completion and quality
• Work with the COI-PLs decentralized content leaders to help move content quickly through the peer review system
• Foster working relationships between the CDTs technical support teams
• Oversee the peer review system
• Ensure that all types of content are addressed within the communities of interest

Technology
• Provide overall technology leadership and support for the project
• Work with technical support teams to ensure that the needs of CDTs are met
• Provide technology training for CDTs
• Ensure compliance with standards
• Provide technology assistance as needed
• Network with state project technology staff
• Manage/maintain central server and its relationship with distributed servers
• Coordinate staff functions
**Information Science**
- Develop and maintain overall structure of the site
- Ensure meta-data is used appropriately to provide high-quality, timely information
- Develop informational architecture for e-Extension
- Ensure appropriate data standards and presentation
- Train technology support teams

**Instructional Design**
- Develop and maintain overall instructional design standards
- Work with technology support teams on instructional design
- Ensure quality control of instructional material
- Provide training on instructional design systems and processes

**Legal Counsel**
- Negotiate contracts with strategic partnerships
- Ensure RFP process complies with grant and contract regulations
- Manage intellectual property rights for e-Extension
- Negotiate acquisitions of intellectual property rights
- File intellectual property rights
- Defend violations of intellectual property rights
- Negotiate royalty rights

4.2 Alternatives and Risk Management

**Alternatives Assessment**

The following section discusses the three options considered by Accenture as alternatives or options to achieve e-Extension’s desired goals. Outcomes for each of these scenarios are shown in the table below.

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Description</th>
</tr>
</thead>
</table>
| Alternative 1 | In a managed-knowledge network scenario, e-Extension would function in parallel with existing local sites and rely on separate, structured content selection, review, and repackaging.  
- Knowledge “packages” that include documents, Web pages, and learning modules could be created for use on e-Extension.  
- Only new and repackaged content would be part of the e-Extension network. This would result in content in line with the e-Extension vision but with limited initial... |
availability of information.

- All content would be approved on a national and/or local level before being submitted to the content repository.
- Profiling will be used to dynamically deliver relevant e-Extension content to individuals and communities of practice.

e-Extension customers would only be able to access content that has been repackaged and qualified by content creators and experts through the new e-Extension process.

- A group of experts that reviews and repackages all content available on the Web fosters consistency and targeting of content on the e-Extension system.
- Local branding of content and offices would be available as part of the repackaging process.
- Unless considerable time is allocated towards content creation, the availability of content would be inherently low due to dependency on human intervention.
- To have higher availability of content, more experts, time, and money are required.

### Alternative 2

**Gateway to locally managed existing and new content**

An e-Extension gateway would serve as a single point of access to sites that are currently offered locally.

- The e-Extension system would serve as a “pass-through” to all existing local sites.
- Customers searching the e-Extension site would be able to find all available information regardless of where information resides.
- Local sites maintain their own content creation processes, so no additional costs would be incurred at the national level.
- This option would yield the highest volume of initial information available.

Acting as a gateway, e-Extension would make available content that has been created and approved locally for the customer to use.

- Since the content management process is only at the local level, information could be duplicated and conflicting.
- Data integrity is managed at the local level.
- Since all locally available content can be accessed to customers, availability of information would be high.
- This alternative would not be conducive to the delivery of targeted information for individuals and communities.
Alternative 3
Hybrid (Recommended)

A hybrid approach of the first two alternatives would apply some quality control over content while also offering access to existing local information. Over time, more and more content would go through the approval process.

- Access to select locally managed content and select new content approved through an e-Extension approval process increases information availability while creating some repackaged, targeted content.
- The e-Extension content repository would grow while retaining local branding.
- Profiling would be used to dynamically deliver relevant content to individuals and communities of practice.
- Since all locally available content can be accessed by customers, availability of information would be high.

The hybrid approach would apply a combination of local and national quality-control processes. Teams of experts would create the content that would get repackaged at the national level.

- A cross section of existing Extension content could be reviewed, repackaged, and incorporated allowing customers to access consistent targeted information as well as content that is currently locally available.
- Content would be co-branded with local sites.
- When searching online, customers would be able to get results that would include what is currently locally available, as well as new e-Extension knowledge packages. This ensures that the maximum amount of information is made available.

Risk Analysis

Methodology
Risk areas were evaluated with respect to their probability of occurrence and severity of impact on a scale of 1 to 5. The following table explains application of scoring methodology.

<table>
<thead>
<tr>
<th>Probability Impact</th>
<th>Low (0-25%)</th>
<th>Medium (26-50%)</th>
<th>High (51-100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Medium</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>High</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
The preceding categories may be interpreted as follows:

- High Risk. There is a high probability this risk factor will pose a serious problem, impacting performance and/or the ultimate business value of the alternative. This risk factor requires sustained executive attention.

- Medium Risk. There is a measurable but moderate probability this risk could materialize and have an impact on the performance of alternatives. If not mitigated, it could eventually pose a serious risk. This risk factor requires program management involvement.

- Low Risk. There is little foreseeable risk to the alternative posed by this area of risk, or the risk has been identified and can be managed effectively at the project level.

**Risk Analysis Results**

It is difficult to fully analyze risk at this stage of the e-Extension project; however, an approximate analysis is provided in the table below. As the project develops, this risk assessment will be adjusted on a periodic basis to include more refined analysis of the requirements, knowledge, and history.

**Risk Management Strategy**

<table>
<thead>
<tr>
<th>Area of Risk</th>
<th>Description</th>
<th>Probability</th>
<th>Strategy for Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business-Needs Risk</td>
<td>If the system lacks necessary features or performance to meet needs of customers, the system may be underutilized.</td>
<td>Medium</td>
<td>Use market analysis and customer focus groups to determine critical system requirements.</td>
</tr>
<tr>
<td><strong>Strategic Risk</strong></td>
<td>If e-Extension is not accessible to customers, many of the benefits of the solution will not be realized.</td>
<td>Low</td>
<td>Use Web-based architecture. Work with customer technical and business staff to create an accessible solution. Gather customer requirements and use premium industry practices to ensure customer accessibility and use.</td>
</tr>
<tr>
<td><strong>Organization / Change Management Risk</strong></td>
<td>If e-Extension lacks buy-in from administrator, specialists, and educators, the investment runs the risk of not being implemented.</td>
<td>High</td>
<td>Promote project to all state Extension services, county offices, and federal administrators across government.</td>
</tr>
<tr>
<td>Area of Risk</td>
<td>Description</td>
<td>Probability</td>
<td>Strategy for Mitigation</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td><strong>Organization / Change Management Risk</strong></td>
<td>If educators are not trained to use and take advantage of the new system, e-Extension runs the risk of being underused.</td>
<td>Low</td>
<td>Train educators in use. Provide easy access to training materials. Design a customer-friendly, Web-based interface to facilitate ease of use.</td>
</tr>
<tr>
<td><strong>Organization / Change Management Risk</strong></td>
<td>If customers are not informed of the availability of the new system, e-Extension runs the risk of being underused.</td>
<td>Medium</td>
<td>Develop rollout marketing strategy for e-Extension to maximize awareness, exposure, and publicity.</td>
</tr>
<tr>
<td><strong>Business Risk</strong></td>
<td>If the project lacks sufficient funding, the project may not be delivered on schedule.</td>
<td>Medium</td>
<td>Develop supportive documentation to address funding needs. Ensure continued support of vision by Extension directors and administrators.</td>
</tr>
<tr>
<td><strong>Project Failure Risk</strong></td>
<td>If business and technical requirements are not documented early and a full alternatives analysis is not completed, an inappropriate solution could be selected which would increase the risk of project failure.</td>
<td>Low</td>
<td>Document business and technical requirements. Involve program and Internet technology professional staff in planning. Conduct a full alternatives analysis and feasibility study.</td>
</tr>
<tr>
<td>Area of Risk</td>
<td>Description</td>
<td>Probability</td>
<td>Strategy for Mitigation</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Data / Content Risks</strong></td>
<td>If intellectual property rights surrounding copyrights, acquisition of rights to pre-existing works, adaptation rights, royalties, and numerous other legal issues are not documented and legalized, the project may be delayed until legalities are protected. The success of e-Extension will actually increase its risk exposure in the marketplace.</td>
<td>High</td>
<td>Obtain legal counsel to manage and mitigate potential exposure. Negotiate key strategic relationships and partnerships. e-Extension will need to actively protect its property rights and defend itself in attacks against its asset base.</td>
</tr>
<tr>
<td><strong>Lifecycle Costs Risk</strong></td>
<td>If e-Extension is not implemented on time, considerable cost overruns could occur.</td>
<td>Medium</td>
<td>Manage e-Extension using the original project plan. Use performance-based contracts, which encourage public and private contractors to complete tasks on schedule and under budget.</td>
</tr>
<tr>
<td><strong>Security Risk</strong></td>
<td>If e-Extension does not provide acceptable Internet security measures, the possibility of viruses will increase.</td>
<td>High</td>
<td>Develop robust security mechanisms in enterprise architecture using encryption-based technologies. Ensure that customer information is secure.</td>
</tr>
<tr>
<td><strong>Security Risk</strong></td>
<td>If the investment does not adequately provide data security, it could compromise private information and jeopardize system use.</td>
<td>High</td>
<td>Use best industry practices for data security.</td>
</tr>
<tr>
<td><strong>Technology Risks</strong></td>
<td>If the investment cannot support an agile system that can evolve over time, e-Extension may become obsolete.</td>
<td>High</td>
<td>Build a robust system using the latest technologies.</td>
</tr>
<tr>
<td><strong>Initial Costs Risk</strong></td>
<td>If the initial cost estimates for creating e-Extension do not account</td>
<td>Medium</td>
<td>Issue an RFP requesting detailed deliverable schedules to properly account for costs.</td>
</tr>
<tr>
<td>Area of Risk</td>
<td>Description</td>
<td>Probability</td>
<td>Strategy for Mitigation</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Dependency and Interoperability Risk</td>
<td>If customers cannot link to e-Extension, many of the self-service features will not be used.</td>
<td>Medium</td>
<td>Use Web-based architecture.</td>
</tr>
<tr>
<td>Project Resources Risk</td>
<td>If adequate funding is not available, the project may not be delivered on schedule.</td>
<td>Medium</td>
<td>Identify, pursue, and secure funding sources for e-Extension.</td>
</tr>
<tr>
<td>Project Resources Risk</td>
<td>If e-Extension does not secure enough skilled project managers, the project may not be delivered on schedule.</td>
<td>Low</td>
<td>Appoint certified project managers.</td>
</tr>
<tr>
<td>Privacy Risk</td>
<td>If security mechanisms are not present, losing confidential user information will be likely.</td>
<td>High</td>
<td>Develop robust security mechanisms in enterprise architecture utilizing encryption-based technologies.</td>
</tr>
</tbody>
</table>

### 4.3 Internal Integration

**Telecommunications and Infrastructure**

The capabilities described for the e-Extension initiative heavily depend on the telecommunication and infrastructure capacity of the Cooperative Extension Services of the United States and its territories, along with other components of LGUs, county offices, and the Cooperative States Research, Education, and Extension Service of USDA. Web-enabling business systems permit mobilization of the work force and provide access to the systems at any time or place. The telecommunication and network infrastructures must be able to support these requirements as well as an increased customer load.

To effectively use the new capabilities implemented under the e-Extension initiative, issues such as remote access requirements and bandwidth capacity must be addressed. As systems and databases are centralized, bandwidth requirements throughout the enterprise wide-area network (WAN) will increase. The internal infrastructure needs to be able to support the increase network traffic across WANs.
Security and Privacy

Robust security will be required to manage and execute the new business processes in the proposed Internet exchange environment. A common personalized portal will be developed, which will be a user-facing application to provide customer access to the capabilities based on customer rights and profiles. As a result, the following considerations must be taken into account:

- Standard authentication and non-repudiation processes will be required.
- Using configurable access control lists will be required to change, control, and manage access to multiple customers.
- Protection from malicious code and virus attacks will be required.
- Intrusion detection mechanisms must be developed.

To guarantee customer privacy, user data must be secured against unauthorized access. A comprehensive authentication and authorization process will be needed to govern internal misuse of the customer data. The grantee data should also be protected from unauthorized access by external elements such as hackers. Again, a comprehensive security strategy must be designed and implemented to alleviate unwanted attacks or access to agency systems.

Reducing Web-based security risks requires both an appropriate technical infrastructure as well as a proper set of competencies, policies, and procedures.

Legislative Requirements

GPEA. The Government Paperwork Elimination Act of 1998 (GPEA) requires that by the end of fiscal year 2003, federal agencies must implement electronic maintenance, submission, or disclosure of information, when practicable, as an optional substitute for paper. Agencies that anticipate receipt of electronic means of 50,000 or more submittals of a particular form must ensure that multiple methods of electronic signatures are acceptable. These methods must be compatible with standards and technology for electronic signatures generally used in commerce and state and local governments. These methods must not favor one technology over another, and agencies must ensure reliable electronic signatures, keep submitted information intact, and acknowledge submissions electronically.

The e-Extension initiative supports the electronic exchange of information. This initiative will maximize data exchange and sharing among the Cooperative Extension services of the United States and its territories, along with other components of LGUs and of the CSREES, through eliminating stovepipe systems and implementing centralized, replicated, and high-quality sources.
**Agricultural Research, Extension and Education Reform Act of 1998 (AREERA).**
The Agricultural Research, Extension and Education Reform Act of 1998 (AREERA) amended the Smith-Lever Act, the Hatch Act, and the National Agricultural Research, Extension and Teaching Policy Act of 1977 (the funding authorities for Extension and research activities) to require approved work plans from Extension and research in order to receive federal funding.

CSREES is implementing the Administrative Guidance for Multi-State Extension Activities and Integrated Research and Extension Activities. This guidance prescribes the procedures to be followed by the eligible institutions to meet the requirements of sections 105 and 204 of the Agricultural Research, Extension, and Education Reform Act of 1998, Pub. L. No.105-185 (AREERA). Section 105 of AREERA amended the Smith-Lever Act by requiring a specified amount of agricultural Extension formula funds be expended on multi-state activities. Section 204 of AREERA amended the Hatch Act and Smith-Lever Act by requiring a specified amount of agricultural research and Extension formula funds be expended on integrated research and Extension activities.

### 4.4 Performance Measures

High-level performance measures for the e-Extension initiative, developed in accordance with the Federal Enterprise Architecture Performance Reference Model v.1.0, are listed below. Performance measures for e-Extension will also develop indicators concerning how e-Extension: 1) serves traditional audiences better, 2) attracts and serves new customers, 3) saves time for local educators to engage in higher quality educational activities, 4) decreases the redundancy of content creation by specialists, 5) involves LGU partners and counties, 6) better serves audiences through profiling technology, and 7) pays for itself. The performance measures assume e-Extension will be fully implemented by year 2006.

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Measurement Area</th>
<th>Measurement Category</th>
<th>Measurement Indicator</th>
<th>Baseline</th>
<th>Planned Improvement s to the Baseline</th>
<th>Actual Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>Customer results</td>
<td>Customer benefit</td>
<td>Satisfaction: percentage of customers who report they are satisfied with e-Extension offerings</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>Customer results</td>
<td>Service coverage</td>
<td>New customers and market penetration: number of new customers</td>
<td>TBD</td>
<td>TBD</td>
<td>TBD</td>
</tr>
</tbody>
</table>
5.0 How much will the opportunity cost?

5.1 Financial Benefits

e-Extension will generate financial value in three ways:

- Increase the efficiency and effectiveness of Extension educators and state specialists
- Eliminate redundancy within existing and future Internet technology systems
- Increase revenue from customer fees.

These three major categories will produce an estimated $43.0 million in total financial value each year, as shown in the table below. (Descriptions of each financial benefit driver, as well as the methodology for calculation, are included below the table.)

<table>
<thead>
<tr>
<th>Benefit Element</th>
<th>Annual Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eliminating redundant Internet technology systems</td>
<td>$3.30 million</td>
</tr>
<tr>
<td>Increased efficiency and effectiveness of Extension educators and state specialists</td>
<td>$37.85 million</td>
</tr>
<tr>
<td>Increased revenue from additional customer fees</td>
<td>$1.88 million</td>
</tr>
</tbody>
</table>

**Total:** $43.03 million

*Methodology for Calculations:*

Financial benefits calculated below include cost savings, cost avoidance, and additional revenue attributable to the e-Extension initiative. These benefits are calculated based on two factors:

1. A baseline amount, which was estimated based on a survey of Extension educators and state specialists, and other Extension staff estimates, and
2. An improvement percentage, which was estimated based on the functionality of e-Extension and savings seen from similar systems in other organizations.
These benefits also include personnel timesavings, based on the loaded payroll cost for hours saved. In effect, these timesavings provide a “workforce multiplier,” enabling the current number of staff to undertake additional value-added work or allow a smaller workforce to perform the same amount of work.

A list of assumptions used in calculating benefit/financial value amounts is included at the end of this section.

Eliminating Redundant Internet Technology Systems

E-Extension’s elimination of redundant Internet technology systems includes two components:

- Avoiding operation and maintenance costs, and
- Avoiding future capital expenditures to modernize redundant systems.

Avoiding Operation and Maintenance Costs. Operation and maintenance costs incurred for supporting redundancy within existing Internet technology systems would be avoided in the e-Extension program. Over time, redundant systems currently in place at the state and local levels will be reduced as these offices use the national e-Extension system. As components of these systems are modified, the cost for maintaining and operating them will decrease. Such reductions might include hardware and software necessary to support program content and delivery that is now supported by many states and will be provided on the e-Extension site such as food safety, pest management certification programs, or frequently asked questions concerning lawn and garden care.

Current annual maintenance expenditures for systems related to e-Extension’s eventual use (such as Web content management or document management) are estimated at $150,000 for each state and $5,000 for each county office, based on estimates of systems currently in place and their maintenance needs. As some technology maintenance expenses are required annually in all 50 states and more than 3,100 local Extension services, the yearly maintenance total are approximately $7.5 million at the state level and $15.5 million at the county level.

By reducing the number of Internet technology system components that must be maintained, e-Extension will reduce state and county office maintenance costs by an average of 10 percent. This savings includes the reduction in expenditures for systems operated individually by states and counties, while recognizing that many systems will not immediately be able to use e-Extension and will be maintained for some period. With a 10 percent reduction in technology maintenance, e-Extension will create $2.3 million in estimated financial value annually.
### Existing Internet technology Software Environment
(Estimated based on current figures)

<table>
<thead>
<tr>
<th></th>
<th>Total maintenance spending for county offices</th>
<th>$15.5 million</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total maintenance spending, for state offices</td>
<td>$7.5 million</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>e-Extension Internet technology Software Environment (Projected)</th>
<th>Level</th>
<th>Internet technology Spending Reduction Amount</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>County</td>
<td>10%</td>
<td></td>
<td>$1,550,000</td>
</tr>
<tr>
<td>State</td>
<td>10%</td>
<td></td>
<td>$750,000</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td></td>
<td><strong>$2,300,000</strong></td>
</tr>
</tbody>
</table>

**Avoiding Future Capital Expenditures to Modernize Redundant Systems.** By using e-Extension, redundant systems would not require funding for improving or modernizing hardware or software. Costs would only be incurred for modernizing hardware and software required for the e-Extension system interface and non-redundant local systems. Such cost avoidance reductions might include hardware and software necessary to support program content and delivery that is now supported by many states and will be provided on the e-Extension site.

Because this benefit is based on avoiding future costs, it uses the projected costs of the current situation as a baseline. Total current spending for modernization and other e-Extension related enhancement is estimated at $200,000 per year for each state. These estimates are based on the scope of e-Extension’s functionality and a need to enable at least a portion of the e-Extension features in each state. Assuming that all 50 states will be undertaking some form of modernization or capital enhancement each year, this equals a total of approximately $10 million at the state level. Cost savings at the county level are assumed to be negligible.

By avoiding technology modernization or enhancement in areas related to e-Extension, state offices can reduce these expenses by approximately 10 percent. This level of savings is based on the scope of e-Extension and its reduction in the need for some state systems, but it must be assumed that some state systems will not be replaced by e-Extension elements and will continue to require expenditures for modernization or development. Further, the 10 percent reduction also takes into account the volume discounts and reduced software license fees Extension providers will obtain by replacing redundant systems through e-Extension. This reduction will create estimated financial benefits of $1 million annually.
### Existing Internet Technology

<table>
<thead>
<tr>
<th>Software Environment</th>
<th>e-Extension-related modernization spending for state offices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Estimated based on current figures</strong></td>
<td><strong>$10,000,000</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>e-Extension Internet technology Software Environment (Projected)</th>
<th>Level</th>
<th>Internet technology Spending Reduction Amount</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>10%</td>
<td></td>
<td>$1,000,000</td>
</tr>
</tbody>
</table>

**Total:** $1,000,000

### Increased Efficiency and Effectiveness of Extension Employees

Three major factors will contribute to e-Extension’s increased employee efficiency:

- Increased efficiency and effectiveness of searches and knowledge creation
- Increased efficiency and effectiveness of customer service
- Increased efficiency and effectiveness of training Extension educators and state specialists

### Increased Efficiency and Effectiveness of Searches and Knowledge Creation.

Extension educators and state specialists will have access to search and collaboration features of the e-Extension system. Tools, including access to specialists’ expertise and frequently asked questions (FAQ) documentation, as well as features enabling Extension educators to communicate and collaborate with other educators nationwide, will speed up the search for answers and knowledge/content creation tasks. Allowing ready access to thousands of Extension educators and state specialists will reduce the amount of time they currently spend looking for information to answer customer inquiries or for Extension educators’ research activities.

Based on survey results and staff workloads, it is assumed that approximately 40 percent, or 16 hours per week, of the state specialist’s time, and 20 percent, or 8 hours per week, of the local Extension educator’s time is currently spent on searching for and creating educational materials. With 9,683 full-time equivalent Extension educators and 4,497 state specialists, the savings would be $1,000,000.

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1 Barber, S. Salary Analysis of the Cooperative Extension Service Positions, December 2001, USDA ARS Human Relations Development.
full-time equivalent state specialists working an average 45 weeks per year, the total time currently devoted to searches and knowledge creation is approximately 6.72 million hours.

Through the use of collaboration tools and search features, e-Extension will reduce the amount of time both Extension educators and state specialists spend searching by at least 5 percent; this is consistent with results seen in other collaboration systems, which have ranged on average from 5 to 20 percent in time savings. This will reduce state specialists’ total search time by about 151,100 hours and Extension educators’ search time by about 162,674 hours. This will result in staff-time savings equivalent to 187 full-time personnel. This amount, in turn, translates to an estimated $13.54 million in financial value added annually. (Savings are based on salary information collected for 1862 and 1890 LGUs; salary figures include a 30 percent premium to account for overhead and benefits.)

### E-Extension Financial Value Created from Increased Search Efficiency

<table>
<thead>
<tr>
<th>Existing Environment (Estimated based on current figures)</th>
<th>Total Extension educator hours per year spent on knowledge/content creation</th>
<th>3,486,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total state specialist hours per year spent on knowledge/content creation</td>
<td>3,238,000</td>
</tr>
<tr>
<td></td>
<td><strong>Staff</strong></td>
<td><strong>Estimated Increase in Efficiency (Hours)</strong></td>
</tr>
<tr>
<td></td>
<td>Extension educators</td>
<td>174,294 (5% of total)</td>
</tr>
<tr>
<td></td>
<td>State specialists</td>
<td>161,892 (5% of total)</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL:</strong></td>
<td><strong>187 full-time personnel</strong></td>
</tr>
</tbody>
</table>

**Increased Efficiency and Effectiveness of Customer Service.** Extension educators answer thousands of phone inquiries every year from customers seeking information on home horticulture, water use, food safety, basic nutrition, 4-H, and a number of other topics. e-Extension will provide Web-based access to data along with a search tool. This will reduce Extension educator time answering calls in two ways. First, it will allow customer self-service, enabling citizens to find answers to Extension questions without calling an educator. Second, enhanced search capabilities and an increase in the volume and accessibility of Extension information will let Extension educators find answers or resources required by customer questions more rapidly. This will significantly reduce Extension educator time spent per citizen call and allow more time for the educator to focus on more customer inquiries or other critical goals.
Survey results show that approximately 15 percent of state specialists’ time (6 hours per week) and 30 percent of Extension educators’ time (12 hours per week) is spent taking and fulfilling requests from customers. This equals 1.21 million state specialist hours and 5.23 million Extension educator hours devoted to customer requests each year (based on assumptions of 1,800 annual work hours per employee and current staff levels).

e-Extension can reduce the amount of time spent on customer inquiries by at least 10 percent by providing citizen self-service tools and reducing employee information search time. This reduction is similar in magnitude to reductions in telephone contacts resulting from the implementation of self-service tools as seen in other organizations. This will save 644,301 hours per year, or an estimated $23.23 million in financial value created annually.

**E-Extension Financial Value Created from Increased Customer Service Efficiency**

<table>
<thead>
<tr>
<th></th>
<th>Total Extension educator hours per year</th>
<th>Total state specialist hours per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing Environment</td>
<td>5,228,820</td>
<td>1,214,190</td>
</tr>
<tr>
<td>(Estimated based on current figures)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>e-Extension Environment (Projected)</th>
<th>Staff</th>
<th>Estimated Increase in Efficiency (Hours)</th>
<th>Equivalent “Added” Personnel (at 1,800 hours/year)</th>
<th>Average Per-Employee Cost Per Year</th>
<th>Financial Value Created Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Extension educators</td>
<td>522,882 (10% of total)</td>
<td>290.5</td>
<td>$60,000</td>
<td>$17.429 million</td>
</tr>
<tr>
<td></td>
<td>State specialist</td>
<td>121,419 (10% of total)</td>
<td>67.46</td>
<td>$86,000</td>
<td>$5.801 million</td>
</tr>
<tr>
<td><strong>TOTAL:</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>$23.230 million</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Increased Efficiency and Effectiveness of Training Extension Educators and Local Staff.** e-Extension will support the use of tacit knowledge currently held only within the individual minds of local Extension educators and staff. This knowledge will be shared through the e-Extension system, flattening the learning curve for new employees and reducing training costs. Similarly, new Extension educators will be equipped with the tools to make the right decisions from day one, reducing the costs of errors made by new employees.

Based on 40 hours of training per employee per year (for both new employees attending training and current staff contributing to new employees’ orientation and training), Extension educators spend approximately 387,000 hours on training annually, while state specialists spend approximately 180,000 hours. e-Extension’s training improvements will reduce employee training by at least 5 percent through knowledge sharing and greater
information availability, saving a total of 28,360 hours per year. This translates to approximately $1.1 million in annual savings. These savings may be realized further in the avoidance of travel costs.

**E-Extension Financial Value Created from Increased Training Efficiency**

<table>
<thead>
<tr>
<th>Existing Environment (Estimated based on current figures)</th>
<th>Total Extension educator hours per year:</th>
<th>387,320</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total state specialist hours per year:</td>
<td>179,880</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>e-Extension Environment (Projected)</th>
<th>Staff</th>
<th>Estimated Increase in Efficiency (Hours)</th>
<th>Equivalent “Added” Personnel (at 1,800 hours/year)</th>
<th>Average Per-Employee Cost Per Year</th>
<th>Financial Value Created Per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Extention educators</td>
<td>19,366 (5% of total)</td>
<td>10.76</td>
<td>$60,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>State specialists</td>
<td>8,994 (5% of total)</td>
<td>5.0</td>
<td>$86,000</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL:</strong></td>
<td><strong>19,366</strong></td>
<td><strong>5.76</strong></td>
<td><strong>$60,000</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL:</strong></td>
<td><strong>8,994</strong></td>
<td><strong>5.0</strong></td>
<td><strong>$86,000</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL:</strong></td>
<td><strong>$1.076 million</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Increased Revenue from User Fees**

The e-Extension model can charge customer fees for specifically designed short courses, decision tools, materials, and other knowledge content items that may be currently offered for free or not yet developed. Customers may purchase courses and materials for online accreditation available through local and state Extension offices. The mere existence of e-Extension could increase the market and demand for existing resources at the university and county Extension offices. It will increase access and market share. The precise business model for collecting and distributing the funds collected is to be developed, but will support the operation of e-Extension and share fees with Extension services to pay for content development. The sum of these fees, regardless of how they are used, is the subject of this section.

e-Extension will help the system attract additional grants and contracts from other federal agencies and possibly the private sector to deliver a national information and education program. For example, a federal agency might employ one state, multiple states, or e-Extension as an organization to develop and deliver national campaigns like obesity education targeted at niche audiences. Or a fast food company may contract through e-Extension to deliver a series of HACCP training modules to all their employees on-line. In both of these cases, e-Extension increases the capacity of one state or groups of states to negotiate new education opportunities for the system as a whole.
A number of state Extension services are currently charging customer fees for some products. It is estimated that 10 states currently charge customer fees, with an average revenue of $300,000 each. Thus, current customer fees for these states total $3,000,000. With e-Extension, additional content will be available for a fee across a larger number of states. Specifically, the number of states offering products for a fee is estimated to increase 25 percent, based on the availability of facilities to charge online fees and the ability to create new value-added content. Further, the average level of fee revenue collected in each state charging customer fees is estimated to increase by 25 percent, as content and content quality improves, increasing volume and potentially increasing per-unit cost. This will result in an estimated increase in customer fees and an increase in financial value of approximately $1.9 million per year.

Financial Value Created from Increased Customer Fees

<table>
<thead>
<tr>
<th>Existing Environment (Estimated based on current figures)</th>
<th>Total customer fees currently generated</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$3,000,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>e-Extension Environment (Projected)</th>
<th>Element</th>
<th>Increase</th>
<th>Additional Revenues:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Additional customer fees in current states</td>
<td>25% increase in current amount (for states currently charging customer fees)</td>
<td>$0.750 million</td>
</tr>
<tr>
<td></td>
<td>New states charging customer fees:</td>
<td>$375,000 collected in each of 3 new states charging fees</td>
<td>$1.125 million</td>
</tr>
<tr>
<td></td>
<td><strong>Total:</strong></td>
<td><strong>$1.875 million</strong></td>
<td></td>
</tr>
</tbody>
</table>

Key Assumptions:
- There are currently 106 state-level Land-Grant institution information technology groups/offices across all 50 states. County secretaries at the 3,100 county-level offices provide support for county Web pages.
- Current annual information technology maintenance costs are $150,000 per state and $5,000 per county office.
- Each year contains 45 workweeks, and staff is assumed to work 1,800 hours per year.
- There are 9,683 full-time equivalent county Extension educators and 4,497 full-time equivalent state specialists across the nation.
- Loaded payroll costs, including benefits and overhead estimated at 30 percent of salary, are $60,000 for Extension educators and $86,000 for state specialists.
• Customer fees are charged in 10 states, with average revenue of $300,000 per year.

Additional Benefits

Beyond the financial value of e-Extension, the system will provide a number of less quantitative additional benefits to Extension providers and the public.

Benefits to Extension:
• Ability to spend more time on value-added, one-on-one or “transformational” education (because less time will be spent on routine tasks)
• Enhanced ability to fulfill citizens’ requests
• Enhanced ability to collaborate across institutions on research, knowledge creation, and content presentation
• Time savings from automating peer review processes
• Reduced printing, distribution, and storage costs
• Streamlined translation content into other languages and formatting for the disabled

Benefits to Citizens:
• More convenient access to Extension information through electronically-available resources
• Increased knowledge and improved quality of life through access to a broader range of more useful content, including nonagricultural content in areas like nutrition, medicine, and law
• Reduced time spent searching for information through personalization, search features, and self-service tools

5.2 Costs

The costs for the e-Extension initiative are included in the table below. Assumptions used to calculate costs are also described.
## e-Extension 5-Year Cost Projections (thousands of dollars)
**October 2003**

<table>
<thead>
<tr>
<th>Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hardware/Software Infrastructure and Support</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical Infrastructure (i.e., hardware)</td>
<td>$600</td>
<td>$400</td>
<td>$400</td>
<td>$400</td>
<td>$400</td>
<td>$3,550</td>
</tr>
<tr>
<td>(servers, storage, network, security, OS, e-commerce)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Server Applications (software)</td>
<td>1,500</td>
<td>1,300</td>
<td>1,000</td>
<td>1,000</td>
<td>1,000</td>
<td>$7,800</td>
</tr>
<tr>
<td>(e-mail, utilities, database, content mgt, multimedia)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Design / Development</td>
<td>1,000</td>
<td>800</td>
<td>700</td>
<td>600</td>
<td>600</td>
<td>$3,600</td>
</tr>
<tr>
<td>(software design, testing, implementation)</td>
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<td></td>
<td></td>
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<tr>
<td>Content management</td>
<td>150</td>
<td>300</td>
<td>200</td>
<td>150</td>
<td>150</td>
<td>$900</td>
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<tr>
<td>(meta-data design, content organization, info mg)</td>
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</tr>
<tr>
<td>Instructional Design and Management</td>
<td>150</td>
<td>140</td>
<td>130</td>
<td>130</td>
<td>130</td>
<td>$690</td>
</tr>
<tr>
<td>(establish standards, consult with content teams)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Marketing and Communications</td>
<td>150</td>
<td>200</td>
<td>500</td>
<td>500</td>
<td>500</td>
<td>$2,000</td>
</tr>
<tr>
<td>(decision data, analysis, promotion, communication services)</td>
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<tr>
<td>Customer Support Services</td>
<td>300</td>
<td>360</td>
<td>360</td>
<td>360</td>
<td>360</td>
<td>$1,440</td>
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<td>(help desk services)</td>
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<td><strong>Subtotal for Hardware/Software Infrastructure</strong></td>
<td>$3,550</td>
<td>$3,440</td>
<td>$3,290</td>
<td>$3,140</td>
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<td>$16,560</td>
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<td><strong>Content Development and Technology Support</strong></td>
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<tr>
<td>Content Team</td>
<td>2,500</td>
<td>2,500</td>
<td>2,500</td>
<td>2,500</td>
<td>2,500</td>
<td>$12,500</td>
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<tr>
<td>Technology Support</td>
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<tr>
<td>Instructional Design</td>
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<td>420</td>
<td>441</td>
<td>463</td>
<td>486</td>
<td>$2,280</td>
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<tr>
<td>(assist faculty in the development of learning programs/modules)</td>
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<tr>
<td>Multimedia Design</td>
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<td>735</td>
<td>772</td>
<td>810</td>
<td>851</td>
<td>$3,932</td>
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<td>(graphic design, scripts, XML, HTML developers)</td>
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<tr>
<td>Software Development</td>
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<td>656</td>
<td>689</td>
<td>723</td>
<td>759</td>
<td>$3,698</td>
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<tr>
<td>(develop applications for use in learning programs/modules)</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Audio/Video Production</td>
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<td>168</td>
<td>176</td>
<td>185</td>
<td>194</td>
<td>$862</td>
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<tr>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Communications</td>
<td>130</td>
<td>137</td>
<td>144</td>
<td>151</td>
<td>159</td>
<td>$685</td>
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<tr>
<td>(content editors)</td>
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<td><strong>Subtotal for Content Dev. and Tech. Support</strong></td>
<td>$4,515</td>
<td>$4,616</td>
<td>$4,722</td>
<td>$4,832</td>
<td>$4,949</td>
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<td><strong>e-Extension Leadership Team</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Executive Team</td>
<td>500</td>
<td>750</td>
<td>785</td>
<td>820</td>
<td>875</td>
<td>$3,730</td>
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<tr>
<td>(leadership, finance, marketing, legal, content, technology)</td>
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<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal for Leadership Team</strong></td>
<td>$500</td>
<td>$750</td>
<td>$785</td>
<td>$820</td>
<td>$875</td>
<td>$3,730</td>
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<tr>
<td><strong>Subtotal</strong></td>
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<td>$8,806</td>
<td>$8,797</td>
<td>$8,792</td>
<td>$8,964</td>
<td>$43,924</td>
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</table>

November 7, 2003 draft
Hardware/Software Infrastructure Support

*Physical Infrastructure (i.e., hardware)*

e-Extension will require a dynamic, robust, reliable, and assessable information technology and Web hosting infrastructure to support the needs of the user community every hour of every day. The Web hosting environment (IHP) will need:

- Web hosting services: a Web (hypertext transfer protocol, or HTTP) serving environment to support development and production services and capabilities. System(s) should feature state-of-the-art processing.
- Backup services: a managed backup system to protect from data loss due to human error, system failure, theft, natural disaster, or a malicious activity.
- Database services: a database environment to support development and production services and capabilities, a structured query language system, and a geographical information system. Data will be stored, managed, and cataloged through database tools.
- Load balancing: the services needed to manage traffic, provide the ability to develop and manage virtual private networks, and provide redundancy to accommodate system failures.
- Security: the systems must be deployed behind a firewall to provide first-level protection of production and development systems; features need to be adaptable and easily maintained, and include logging and reporting, notification of attacks, and the ability to manage/control equipment.
- Storage: to meet the demand for reliable, measurable data storage.
- Monitoring: a Web-based system to monitor systems operations, network connections, addressing, and resources. Services should be customizable and provide data analysis, status checks, local monitoring, and reporting services.
- Search engine: access to a good search engine that supports searching for hypertext pages and provides a catalog of available resources. Specialized search engines, such as those that support natural languages searches and can help organize information relative to the specific needs of users, will be important.
- e-Business: a secure and encrypted (Secure Socket Layer and HTTPs) e-commerce platform for selling products and services, including learning modules and courses and information products. The system should accommodate virtual storefronts, business-to-business per Electronic Data Interchange, and demographic/customer information gathering and analysis.
- Control/management services: compatible tool sets that allow automation and accessible management of systems in support of e-Extension development and outreach. These would include but are not limited to: e-mail services and mailing list management; IP-based file transfer (i.e., FTP, WebDav); account management and billing; accommodation of scripts and routines to provide customized features/reports (i.e., access to cgi-bin); and applications that can be customized and enhanced to adapt to discoveries. Services would include management and resource services for content providers.
• Internet: an Internet technology environment with ISP and DNS services, and
dedicated connection to gigabit backbone service.
• Operating system: the system must be robust, measurable, able to manage data,
memory, processing, and communication services for required applications (i.e., e-
mail, content management, database, languages, etc.). It must support an open yet
secure environment for various users including administrators, developers, managers,
value-added processors, and the general public.
• Web statistical management: access to Web statistical management measurement and
analysis related to user access, information use, demographics, etc.; must be
configurable, reliable, and capable of extended periods of uptime.
• Interactive video: interactive video (i.e., H.323, etc.) can be useful for supporting
interaction among learners/teachers. A multimedia conferencing unit with network
access could support certain communication and learning applications.
• Telephone services: phone service and teleconferencing capabilities will be important
team planning and work, and to address the needs of end-users.
• Utilities: access to utilities and services yet to be identified will be important in
providing necessary system resources.

Server Applications (software)

The Web hosting environment will provide access to applications, libraries, and tools
necessary to support fully-featured development and production systems. The key
requirement is to provide users with access to quality services. A key decision in this
discussion will be the selected platform since it drives the selection of applications and
cost. Following is a list of application requirements, regardless of platform.

• Web server
• Database server
• Search engine
• GIS server
• Content management
• Portal
• Language support
• Collaboration/communications
• (blogs, chat rooms, discussion groups, instant messaging, whiteboard, H.323
interactive video, etc.)
• Multimedia
• audio/video streaming - encoding (i.e., support for standard formats)
• graphics (i.e., JPEG, GIF, PNG)
• Text-based content (i.e., support for standard word processing applications and
formats
• Web measurement / analysis
• Course development
Content Management

Content management will involve designing, organizing, implementing, and maintaining national meta-data standards to manage content flow throughout the system. Content management systems, thesauri, and search technologies will be integrated to deliver information to customers.

Instructional Design and Management

Instructional design and management will involve working with content teams to design and develop educational curriculum and learning objects consistent with the characteristics of a Web-based delivery system and online learner expectations. Educational guidelines and recommendations will be established to ensure goals are met concerning learning effectiveness, evaluation, and learner assessment. A variety of technologies will be used including audio, video, animation, geographical information systems, database technology, content management, and more. Appropriate meta-data standards will be developed, attributed to all content, and integrated within the specifications of e-Extension content management.

Marketing and Communications

Marketing and communications support will be necessary to provide access to clear, concise, accurate information and education programming. Effective writing, editing, and communication skills will help guarantee information and educational programming is provided in a way that meets audience needs. Effective marketing requires understanding the audience, analysis of user access, information use, demographics, and more.

Customer Support Services

Customer support services will feature 24-hour help desk services to respond to customer’s questions and information needs, ensuring e-Extension services are available and providing user support. Training curriculum will be developed and available for content providers and customers.

Content Development and Technology Support

Content Team Development

Content teams will require support to identify, aggregate, create, and enter content and services into e-Extension. Resources will be critical to bridge gaps between what content providers may be providing customers currently versus the expected services and presentation of information and education through e-Extension. These resources will leverage traditional resources received via grants and contracts, and match those provided by participating institutions. Together, content teams should have the incentive and resources to organize teams, retool, and generate e-Extension products.
Content Development Technology Support

Technical and multimedia support will be necessary to develop educational curriculum and learning objects in support of content teams. Technical and multimedia support teams will help content specialists develop learning modules, aggregate and organize content, package information and educational materials, develop specialized applications, customize the user interface, and produce highly personalized user services. Support will include skills in the areas of instructional design, multimedia, audio/video, Web use, software development, course development, geographic information systems, and more. Resources will be allocated to content teams who have requested support through approved business plans. Successful business plans will include the content to be developed and evidence that it will meet e-Extension product guidelines.

5.3 Financial Analysis

When evaluating a potential investment, the best measures are net present value (NPV) and return on investment (ROI). NPV indicates the total net benefit of an investment, after adjusting for the time value of money. Any investment with a positive NPV is economically justified, as it will add to the net assets of the organization.

ROI is calculated by dividing the NPV by the total discounted costs and indicates how much benefit will be generated by each dollar invested. An ROI of zero indicates that the returns from an investment are equal to its costs, while a positive ROI indicates a positive return. ROI is especially useful when resources are limited, since ROI indicates the return for each dollar invested and not just an overall return.

For e-Extension, the NPV is estimated to be $78.9 million; this indicates that investing in this alternative returns approximately $78.9 million more in benefits than costs, after adjusting for the time value of money. Return on investment is 188%, meaning each dollar invested in the system recovers the initial investment and earns an additional $1.88 in return.

Internal rate of return (IRR) is another method of financial analysis that considers the time value of money. Essentially, IRR indicates the interest rate that is equivalent to the dollar returns USDA can expect from the project. (Alternatively, and more precisely, it indicates the discount rate that would produce a zero NPV. If the discount rate used for the investment is lower than this rate, the investment will produce a return for USDA.) The IRR for this project is 112%, so the discount rate—which is equal to the Government’s borrowing cost—would have to be greater than 112% for the investment not to produce a return.

Finally, returns can also be expressed through the Benefit Cost Ratio (BCR). Adding 100% to the ROI computes BCR. In the example above, the BCR is the Total Discounted Benefit divided by the Total Discounted Costs and equals 288%; this means that the
benefits are 288% percent greater than the costs. The BCR is more often expressed as a decimal amount, however, such as 2.88, and is reflected in this format in the table below.

<table>
<thead>
<tr>
<th>e-Extension Financial Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amounts in $ Millions</strong></td>
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<tr>
<td></td>
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<tr>
<td><strong>Discount Rate</strong></td>
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<tr>
<td><strong>Estimated Total Annual Benefits</strong></td>
</tr>
<tr>
<td><strong>Discount Factor</strong></td>
</tr>
<tr>
<td><strong>Discounted Annual Benefits</strong></td>
</tr>
<tr>
<td><strong>Total Annual Costs</strong></td>
</tr>
<tr>
<td><strong>Discount Factor</strong></td>
</tr>
<tr>
<td><strong>Discounted Annual Costs</strong></td>
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<tr>
<td><strong>Discounted Net</strong></td>
</tr>
<tr>
<td><strong>Cumulative Discounted Net</strong></td>
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<tr>
<td><strong>Net Present Value</strong></td>
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<tr>
<td><strong>Return On Investment (ROI)</strong></td>
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<tr>
<td><strong>Benefit-Cost Ratio (BCR)</strong></td>
</tr>
<tr>
<td><strong>Internal Rate of Return (IRR)</strong></td>
</tr>
<tr>
<td><strong>Payback Period</strong></td>
</tr>
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</table>

Assumptions and parameters used in calculating net present value and financial metrics:

- A five-year horizon is used (only costs and benefits over the first five years of the project are included).
- A 1.9% real discount rate, per the five-year discount rate in OMB Circular A-94
- Benefits begin in Year 3.
- ROI = NPV ($ 78.9 M) / Total Discounted Cost Over 5 Years ($ 42.05 M) = 1.88 or 188 %
Appendix

Appendix A: Background, History, and Chronology

The purpose of this collaborative partnership is to provide information, educational programs, and technical advice directly to individuals, families, and communities. This knowledge will enable recipients to be self-reliant and improve their lives through education. They will “apply research-based practical education to the complex problems of America’s rural and urban families, communities, agriculture, natural resources, business and industry.” This combination is just one key to fulfilling the CSREES mission.

As the federal partner with the LGUs and counties, CSREES offers program leadership to identify, develop, and manage programs to support university-based and other institutional research, education, and Extension programs. CSREES provides fair, effective, and efficient administration of Federal assistance in implementing research, education, and Extension awards and agreements. The mission of the USDA’s CSREES is: “to advance knowledge for agriculture, the environment, human health and well being, and communities.”

Through deployment of the e-Extension system, the Cooperative Extension Service will more efficiently serve current and new customers in ways that provide accurate, timely information for decision-making anytime, anywhere. The benefits of this effort include immediate access to traditional and creative research-based information and learning resources about agriculture, communities, youth, families, and natural resources. This easy access gives the research greater applicability and value to a broader array of customers.

The concept of developing e-Extension as a Web-based information and education system is of high value to administrators, directors, and program leaders in the system, including CSREES. As a next step, CSREES and Extension directors and administrators have requested that a detailed business case be presented before deployment. In response, the e-Extension staff organized a 3-day work session in April 2003 to refine the e-Extension model in terms of features, technical structure, standards, and content development with the results posted on the public project management website http://asred.msstate.edu/national. These improvements serve as the basis for developing elements of the business plan such as cost-benefit and governance. In June 2003, CSREES provided the services of Accenture, a world-class consulting firm and primary contractor to the USDA eGovernment Initiative, to assist a small group of state leaders to begin development of a comprehensive business case for e-Extension by September 1, 2003. The working group consisted of program leaders, information technologists, instructional designers, communicators, and administrators.

e-Extension is an effort initiated by the Extension Committee on Organization and Policy (ECOP) of the National Association of State Universities and Land-Grant Colleges.
(NASULGC). A regional taskforce was created in September 2001 and charged with developing a 1-day workshop on the e-Extension vision for the Southern Region of NASULGC. At this meeting, there was a consensus on the need to transform the way Extension delivers its mission through technology. Attendees also agreed to develop a proposal for a national e-Extension system, share it with other regions for input, and submit it to the ECOP for endorsement.

The concept of e-Extension was catalyzed by a 1994 presentation at the U.S. Agricultural Communicators Congress in Washington, D.C., discussing the process by which information gains value and how that puts the traditional Extension system at a competitive disadvantage. The primary messages included: how information gains value in the new information marketplace; Extension’s survival depends on understanding the customer-driven environment; and Extension must step out of sole-source provider mode and begin to compete for new audiences. The full paper, entitled “Extension on the Brink,” is found in the *Journal of Applied Communication*, October 1998, or at [http://www.agcom.purdue.edu/AgCom/EXTonBrink/](http://www.agcom.purdue.edu/AgCom/EXTonBrink/).

Further, ECOP appointed a national committee to make recommendations concerning the future of Extension. The committee issued a report in February 2002 entitled "The Extension System: A Vision for the 21st Century." This report recommended that Extension develop a national information technology network to organize, manage, and deliver online Extension information and education.

In June 2002, a meeting of the Digital Access Research Team was held at Purdue University. This group conducted a Web-based search of information on several topics related to and supportive of e-Extension, which resulted in some of the basic concepts used to draft the e-Extension plan.

To provide an orientation and collect guidance about optimal practices from the Extension community, several activities were conducted. In December 2002, the American Distance Education Consortium planned and held a think tank in Atlanta. The think tank was comprised of 50 talented and diverse individuals, including senior administrators, program specialists, Extension Internet project managers, and communication and information technology leaders from CSREES and 1862, 1890, and 1994 LGUs. The think tank meeting resulted in a draft of guiding principles, ideas for developing a prototype/demonstration, two recommendations for the business/operational plan, identification of key audiences and first projects, and recommendations for needs assessment/market research. This input was integrated into presentations for three regional meetings held in January 2003.

To determine the feasibility of e-Extension, CSREES sponsored three more regional meetings in Pittsburgh, Kansas City, and Las Vegas in January 2003, involving over 300 information technologists, communicators, content specialists, and administrators. The consistent response, with input from 47 states and three territories, was “move ahead with vigor.”
In February 2003, the National Extension Directors and Administrators meeting was held with a major presentation and small group review of the plans for e-Extension. The National Extension Directors and Administrators endorsed the concept that e-Extension is important to the total Extension system and asked the staff to continue the effort with focus on a business plan.

Through its participation in these meetings, CSREES has contributed to the refinement of the e-Extension vision. CSREES agrees that the e-Extension initiative is a necessary component for the Extension program in helping customers improve their quality of life through application of research knowledge.