County of Nevada, California

2003 Supplement
Enterprise Information Technology Strategic Plan
April 1, 2003

Acknowledgments

The combined efforts and guidance of many people helped produce this document. The Nevada County Board of Supervisors' strategic goals for FY00/01 called for the original plan and this supplement. Numerous Department Heads and Elected Officials contributed hours of their valuable time to this update effort, making the entire process possible. Staff members from all departments participated in updating the 2001 Plan. Information Systems Department staff produced significant and valuable content. A Nevada County citizen based panel gave their time to review and comment on the draft document. We would like to thank all those who contributed time and energy to this project.

County of Nevada:
- Board of Supervisors
- Appointed and Elected Officials
- Cross-departmental staff members who participated in various Business Solution Teams
- Information Systems Department Staff

Special thanks to our local county residents:

Citizen Advisory Group:
- Clark Moots – Chief Information Officer, Placer County *
- John Brooks – Technology Director, Nevada Joint Union High School District *
- Paul Norsell – Nevada County Business Association/LAFCO
- Russ Steele – Sierra Telecommunications Coalition
- John Krivacic – IT Project Management Consultant

  * Indicates original members.

2003 Supplement
Enterprise Information Technology Strategic Plan

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I.   Executive Summary

In the two years since the first plan was developed, the County has implemented or launched fourteen of the fifteen top prioritized countywide projects and completed thirteen of the original seventeen recommendations. The majority of our core operational systems and infrastructures have been updated and put into place. The County has continued to maximize the use of its existing technology infrastructure as the medium of exchange for knowledge and services. The County will now focus on fully implementing and delivering to all its users the technological capabilities that have been put into place over the past two years.

The new economy has required businesses and governments to develop more regional partnerships and data sharing agreements. Customer service and cost effectiveness continue to be the major measures of success. As such, Citizen Centric high Return on Investment (ROI) projects such as implementing Digital Government services will receive greater focus. We believe the County has stepped forward to enthusiastically and successfully meet these new challenges. We are identifying and implementing new systems, business rules, tools, and workflows that will support and promote success in this new *"Information Age"* and are user and citizen centric.

The central themes of this Plan Supplement include:
- o Leverage the existing infrastructure by providing extensive training to County personnel.
- o Collaborate with other agencies, departments, city governments, State and Federal governments to automate business processes based on government best practices while sharing information across departments and agencies.
- o Partner with businesses to identify critical needs and to deploy customer-oriented services.

The Internet has continued its dominance of providing a source to users of knowledge and services. As a consequence, customers have more power to ensure governmental

accountability for delivering services or establishing public initiatives. Citizens have more control over determining when and how they interact with government. They will have the option of gaining immediate access to, and giving instant feedback on, the services and processes of government.

The purpose of this supplement is to provide a status of what has been done since the initial Enterprise Information Technology Strategic Plan of November 21, 2000. This supplement also makes new recommendations for the County to continue its leadership role. Nevada County continues to take the lead in providing online digital government services and fostering economic development. We are achieving the level of automation that delivers services to our citizens and that adds value to the citizen, the community, and the County. Our departments are continuously asked to do more with less; this can only be achieved through successful automation.

***Business process development team
CRM project***

We are not wasting this opportunity by simply automating our existing business processes, but rather are transforming them into a completely new model defined by this new era of the *"Information Age"* and *"Digital Economy."* It is easy to merely automate existing business practices, however, our citizens expect more from us. This transformation takes leadership and resolve from our elected and appointed leaders, working together to improve services for our citizens. People solve problems, technology is only one of many tools used to do

so. However, technology projects are unique opportunities for core organizational change. They require our leaders to combine vision with expertise; and then, by applying innovative technology, remarkable results are achieved.

Nevada County has moved into a new realm of operational capability and service to our citizens. The top information technology issues still facing the County include:

- Information technology leadership and sponsorship.
- Enterprise information technology views and understandings. Cross-departmental/agency/community/ business collaboration.
- Information technology capital investment and budgeting.
- Technology refresh initiative and minimum standards development.
- Information Systems Department resources and structure.
- Information technology project management.

Local government services and their associated delivery methods are continuously changing. This was clearly communicated to us from our Citizen Advisory Group who provided input and feedback on this update. The number one priority for the Citizen Group was for the County to assist and *"lead"* in our community's digital infrastructure development. Healthcare, education, and economic development topped the list of issues requiring high-end digital communication services in our community – *"broadband Internet access to every home and business"*.

Digital Government services should not be viewed on a departmental, agency, or even an entity basis. They should be viewed from a regional countywide collaborative perspective, leveraging resources and abilities to serve all residents of Nevada County. For example, City residents should not have to purchase and maintain duplicate technology and infrastructures that already exist at the County or State level. Collaborative relationships between our cities, schools, courts, community partners, and the County are currently being built based on this approach.

Downtown Nevada City

This Plan and its Supplement do not purport to address every information technology related issue the County currently faces and provide a solution to it. That is clearly impossible and impractical. The approach taken to develop this update is as follows:

1. **Identified a vision and set goals for the future:** Citizen centric E-government has been elaborated upon in the Recommendations Section.
2. **Identified what is needed to achieve success:** An enterprise view of information technology for systems, data sharing and capital investments.
3. **Developed and utilized a collaborative information technology decision-making "infrastructure" to promote enterprise projects and policies:** Continued the *Nevada County Technology Partnership* (NCTP) information technology governance model for cross-departmental cooperation and collaboration, based on the principle of customer/citizen centric solutions, and placed the information technology decision making process into the hands of the business leaders.
4. **Identified the County's major information technology initiatives:** Through the NCTP, the County's business leaders identified, ranked, prioritized, and updated the major information technology systems/applications they viewed as most critical to the County's operations for replacement. Projected funding requirements were then estimated.

5. **Proposed refined and new recommendations to address specific County information technology issues:** As systems, technologies, and other issues are addressed throughout this plan, recommendations have been proposed to address them.

This strategic plan supplement has been formatted for the non-technical reader. Only those portions of the plan changed as a consequence of the update process have been included herein. Specific technical issues and supporting documentation have been placed into appendices that will be updated at a future date.
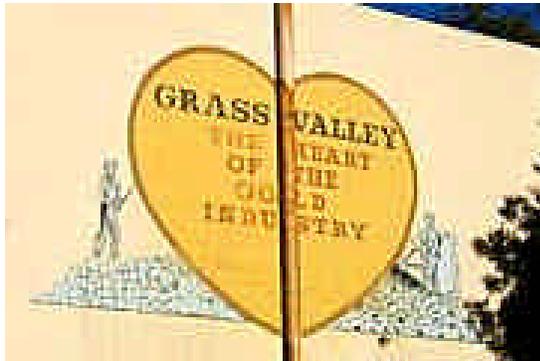
Grass Valley building

The format was intended to keep the overall report concise, useful and readable. This supplement provides the updated roadmap and infrastructure to plan, prioritize, evaluate, budget and implement collaborative enterprise solutions that continue to lead our County into the "Information Age."

[signature]

Stephen T. Monaghan

Chief Information Officer
County of Nevada, California

II. Vision and Statement of Goals

To achieve a level of automation and technical ability that enables effective "seamless governmental services" (cohesive services delivered to the citizen regardless of the number of agencies involved or levels of bureaucracy required to fulfill the citizen's service need), that add value to the citizens of Nevada County, enhancing the quality of their lives while delivering the services in the most efficient, cost effective and convenient manner possible.

Goal 1: Provide automation systems and services that will enable Nevada County to achieve its stated Strategic Goals as published by the Board of Supervisors.

Goal 2: Set forth E-government enterprise automation initiatives and objectives "Portals" that will provide seamless governmental services at the counter, by fax, by phone, by email and over the Internet.

Goal 3: Provide a trusted environment and forum in which all departments and agencies, through collaboration, can share ideas, resources, build partnerships, and re-engineer their mutual business workflows and customer service offerings with innovative automation solutions.

Goal 4: Form partnerships between County leaders and managers at all levels of the enterprise to keep them apprised of the capabilities and possibilities that automation can deliver for them in their efforts to improve their business and service delivery activities.

Goal 5: Reach beyond the County organizational boundaries and build partnerships with community stakeholders on technology issues and services.

Meeting of the Nevada County Technical Partnership Citizen Advisors
Kathleen Rubenstein, John Krivacic, Russ Steele, John Brooks, Steve Monaghan

III. Introduction

A. Nevada County Enterprise Information Technology Strategic Plan Supplement

Nevada County management recognizes that Information Technology and its related functions are critical to efficient and cost effective delivery of public services. The Internet is now being used for the delivery of government information and services, called E-government, and is revolutionizing how government functions. This Plan recognizes that information technology is increasingly becoming a critical tool in the delivery of Nevada County government services and that the development of a long range Strategic Plan for the County's information technology is critical to continued success.   This Supplement provides a set of updated, revised recommendations and a report of status and progress made in implementing the recommendations of the 2001 Strategic Plan, dated November 21, 2000.

The Supplement to the Plan continues to recognize the following three strategic areas:

- User-centric Governance
- Organizational Alignment
- Methods of Funding

It should be noted that these strategies relate to very fundamental organizational issues. The strategies focus specifically on the establishment of structures and processes that must be in place to allow for effective consideration of any new technologies; the acquisition and implementation of the technologies; and, the ongoing operation and support of those technologies within the Nevada County environment. The goals and strategies that define the County's new information technology approach are updated and refined in this information technology strategic plan supplement and are included in the new Citizens' Summary.
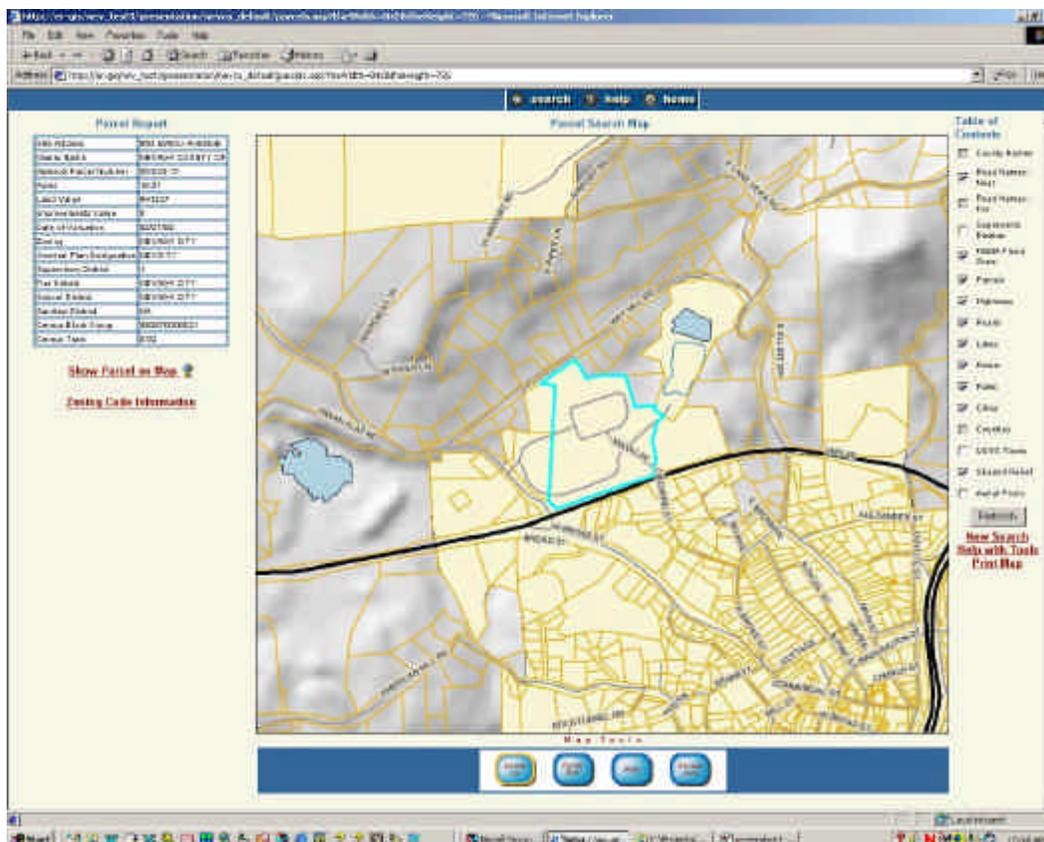
Internet GIS parcel information application

B. An Overview of the Planning Methodology for Information Systems

The process is structured to review the current state of the County's information technology and to identify strategies for use of technology that will bring maximum value to the County's business. Specifically, the objectives of the project focused on two major areas:

1. Assess where Nevada County currently is with regard to its use of technology and its strengths and weaknesses.

2. Update the Strategic Information Technology Plan as a Supplement.

The process used in developing this supplement included the following activities:

o Collecting inventory information about the County's current technical environment.
o Conducting two focus group workshops with the Nevada County Technology Partners Citizens Advisors.
o Reviewing pertinent documentation such as strategic plans, budgets, operating plans, and other planning materials.
o Developing a management assessment of the existing information technology resources and building awareness of the need for refreshing the technologies.
o Understanding the value of infrastructure assets using the Governmental Accounting Standards Board (GASB) #34 Infrastructure Reporting Requirements as a guideline.

The results of the planning and information gathering activities are presented in this Supplement and in a presentation to the members of Information Systems Steering Board (ISSB). The objective of this presentation is to gain consensus on the priority issues and to agree on the refined strategies to address those issues.

The planning process results were organized into two primary strategic focal points (projects), each structured to help the County address critical issues and challenges as strategic details (recommendations), and to articulate a set of tactical plans for implementing these strategies.

IV. Opportunities for Community Service

A. Electronic Government

E-government is inevitable and requires the kind of public-private sector collaboration that creates the dynamic atmosphere for information technology to transform government and provide services directly to the customer 24 hours a day, 7 days a week. The customer can be a citizen, a business, or even another government entity. E-government delivers levels of services to an extent not seen before and in a manner that is most convenient for the customer, while often allowing government to provide those services at a significantly lower cost. E-government will help foster a closer relationship between government and its customers. A more responsive and efficient government is highly valued by its citizens, and in time, citizens take greater public ownership. Nevada County's responsibility as leader, facilitator, and implementer would ensure that the needs of its citizenry would be met in a satisfactory and expeditious manner.

Online services listing

E-government is about service delivery, not technology, and government managers at all levels need to be involved. E-government is not just about Web pages, but is more importantly about the cultural changes within government itself to deliver this level of services to our

citizens. Customers often know what they want; they just do not know how or where to go to find it. E-government can provide this information, this direction, and seamlessly bridge the gaps between where one department ends its role and another department begins in the entire governmental service process.

A "Build Your New Home" Web page portal could guide a homebuilder through the process of filling out the required forms and permit applications. The citizen would be electronically guided through the process, would only have to enter critical information once, and would do the entire process from the comfort of their home or office. It would be difficult for the homebuilder to submit a form or application out of order or unknowingly omit one since the online system would be monitoring the entire process. They would not even need to know which department to go to next, since the system would take them electronically from Planning to Building and then over to the Assessor automatically. The entire process would be cohesive and seamless to the homebuilder. This mode can be reproduced many times in County. Community Development, Public Safety, Community and Social Programs, and Justice all have activities that can be made available online.

Government "Perspective" web page

As the example above demonstrates, E-government is also about re-engineering business processes. This can only be achieved by strategically implementing enterprise automation systems that can easily share information and pass data between departments.   Only in an enterprise viewed as a collaborative, cooperative environment can E-

government ever reach its' full "revolutionary" potential. The transformation of government processes from the Industrial Age to those more in line with the Information Age would still require maintaining focus on the six key government activities in Youth, Education, Civic Engagement, Disaster, Business, and Seniors. Nevada County is very fortunate to have a healthy organizational culture that will foster and nourish an E-government initiative. This Plan describes the priorities, means and funding for harnessing information technology to serve its citizens as never before.

The State of California has an aggressive E-government objective to place 80% of the State services online **by 2005**. The Department of Motor Vehicles (DMV) placed the vehicle registration service online, processing 90,000 requests in just 4 months. The State's next goal is to bridge the service process from the State level to the Local level. For example, to open a new restaurant requires 7 permits from multiple agencies, then the business owner needs to come to their County to complete additional State forms. Looking at the homebuilder example, envision the process for the restaurateur to electronically move from the State to the County, passing along all the original core information and completing the entire process seamlessly.

On December 17th 2002, President Bush signed the E-government Act into law putting in place a $345 million E-government Fund and initiative. President Bush sites E-government as one of his five key cornerstones to make government run more like a business; making it easier for citizens to interact with government.

Long-term objectives for both the State and Federal E-government initiatives are to have "Citizen Portals." These are **Web pages** that pull together and "customize" citizen's access to government at any or all levels of the Federal, State, County, and City governments. For example, such a portal would let contractors or other interested persons look at the information and services that are relevant to their activities and lives. By making all governmental services appear seamless to the citizen, one only needs to know what is wanted, not where to go to find it. This concept of "Government Without

Boundaries" is the objective of a current project by the US General Services Administration.

E-government could provide a means of communicating issues with the public, including surveys and polls, a forum for training stakeholders, and a means of transacting payments of fines, penalties, and taxes.

The vision for E-government does not end with only governmental services, but includes community services. Adding more value to E-government services requires the inclusion of our local schools, non-profit organizations, service providers and agencies, special districts, and business community. E-government could really be termed E-Community, and must from its inception, include collaborative public sector and private sector partnerships to attain real success and deliver true value to the citizens of Nevada County. As public-private sector partnerships mature, Nevada County also may elect a role as a financial partner.

B. Citizen Relationship Management

Citizen Relationship Management (CRM) is more than a customer service automation solution. Citizen Relationship Management is an organizational activity supported by technological interconnections to every County service that manages and monitors the County's response to the needs of our citizens. Providing **outstanding** customer service is not a matter of "IF," it is a matter of "WHEN" and "HOW," Intra-departmental collaboration, goals, and standards are needed to implement a CRM system and set the definition of **"Outstanding Customer Service"** for Nevada County. Nevada County is currently implementing an enterprise CRM system with four department routines developed to date.

A CRM system is also a vital component to an E-government effort. Once the citizen request is accepted at the counter, by phone, fax, email, or over the Internet, it is intelligently routed to the proper departmental employee assigned to respond. Automatically, the system keeps the citizen informed of the request's status at every stage. Since the system keeps track of all

service requests at the point of entry into our organization, requests will never be forgotten or misplaced, putting reliability and accountability into our countywide customer services activities.

In addition to tracking requests, a CRM system also provides other features such as quality control and reporting. Business rules and standards of quality can be built into a CRM system such that every request is processed in the same manner, meeting the same standards for quality, prioritization, and responsiveness. Comprehensive reporting allows County leaders and managers to analyze service needs, performance, patterns, and areas that may need special attention.

Main entry screen for CRM application

The County should consider a CRM solution to be a critical element of countywide operations. CRM is critical because it leverages technology by putting the citizen's request into **an integrated system** so it is quickly responded to and constantly monitored. The County CRM should be elevated to the same level of importance as Computer Aided Dispatch is for our Sheriff's 911 operations.

The CRM should publish output of customized performance reports in an HTML format to a web page that citizens can access. This would provide the citizens one more level of determining the performance efficiency and effectiveness of their government. This would further enhance public ownership of government.

C. Community Information Technology Issues

Although not typically addressed in an Information Technology Strategic Plan, there are various community technology issues that need to be raised. In the Information Age, the walls between departments, agencies, and the private sector are dissolving. We see the community technology issues of interest to be:

- E-government initiative.
- Countywide digital infrastructure.
- Economic development.
- Digital divide – citizens access to technology.

E-government: As outlined in the E-government section and the following paragraphs, this activity can only truly achieve excellence if it is based from its conception on public/private partnerships. Our community stakeholders need to be brought into the process of our E-government initiatives. By organizing our services to the citizens around "life events", we have facilitated navigation and design of our presentation to citizens.

Countywide Digital Infrastructure: As the County struggles with building its own digital infrastructure to sustain an ever-increasing computing need, so does our community as a whole. Core basic digital communication capabilities are limited in our community. High-speed Internet bandwidth and wireless technologies are not available to much of our population and businesses. Leading economists state that a solid digital infrastructure is critical to a community's economic growth and sustainability. Addressing this issue was the top concern of the Citizen Advisory Group.

The Information Systems Department has been cooperating with our local digital providers to assist them in delivering their services in our community. For some it is a simple matter of "supply and demand, and they find it un-economical to promote further expansion of service in such a rural area; others simply need to be shown the need and will respond with added services. Through the Economic Resource Council, a community task force has

been created to help address this issue. The County's Chief Information Officer is a member of this group. As the local governmental body, the County should support and assist this group as much as possible. The County's Geographic Information System (GIS) services and other County information/resources will be crucial to the group's success.

Nevada County has two 15-year term cable franchise agreements for the unincorporated areas of Nevada County. Both franchise agreements expire within the next 12-18 months. The cable franchise agreement with USA Media includes the unincorporated areas of Truckee, Lake of the Pines, Alta Sierra, Ranchos and South Nevada County. The remaining unincorporated areas of Nevada County are covered in a second franchise agreement with Comcast.

Downtown Grass Valley

There are five government agencies that are involved in cable operations in Nevada County: the three franchise authorities (Nevada County, Nevada City and the City of Grass Valley) and two Educational bodies (Sierra College and Nevada County Schools).   All five agencies have agreed to approach the cable activity with Comcast from a regional perspective and to engage a professional telecommunications consultant to assist with the negotiations. A regional approach to negotiations will provide significant leverage to negotiate for cable upgrades.

The AT&T Broadband/Comcast franchise negotiation is being accomplished under a memorandum of understanding (MOU) between Nevada County, Nevada City, Grass Valley,

Sierra College and the Nevada County Superintendent of Schools. Included in the MOU is the implicit agreement to jointly manage Public, Education and Government (PEG) Access on an on-going basis.

Goals, or anticipated outcomes, for the upcoming cable franchise negotiations include, but are not limited to, the following:
- o Institutional Networks
- o Support of PEG Access
- o Extension of services and capabilities

Engaging a professional consultant with experience in cable franchise renewals will ensure that community needs, PEG Access, vendor performance standards and technological advancements are assessed and incorporated in negotiations and contractual obligations.

Economic Development: In a manner similar to that described above with the local cable franchise, the County can leverage its ability to assist new economic development in industries such as technology, biotechnology, environment, and food. The County would collaborate to form new public-private partnerships while increasing its tax base. These partnerships would communicate the benefits of information technology to the community through the sharing of best practices. The County would further benefit its process re-engineering by understanding new businesses and their needs for effective, efficient government services. Understanding the private sector's customer oriented services will facilitate the creation and maintenance of government services, as "user-centric." The private sector will be encouraged to participate in the development of E-government. As a consequence, the private sector will refine its perception of County government and contribute its expertise in redefining needed government services.

Digital Divide: This is a politically charged topic receiving much attention at the State and Federal level. The core issue is to provide equal access to all citizens. Local governments are accomplishing this in a variety of ways. Many libraries (including ours) and schools provide free citizen access to computers and the Internet. Free Internet training is also provided

at our local County Library. In addition, there are Federal grants available to fund "community technology centers" where citizens can gain free computer access and training. Other communities have even put into service "mobile" technology centers that drive into the Community, much like a **Library Bookmobile**. Kiosks, or self contained access points, are used by some agencies to place governmental services in shopping malls, schools, and other locations. As more services become available via automation, the reduction of the digital divide will become even more critical. Security and privacy will be addressed through policy and procedures designed to protect the community and maintain the privacy of the individual citizen. Citizens will need applications access, training, and support. Training of support staff will become a tactical and logistical concern as we move forward. The Information Systems Steering Board will encourage solutions and monitor this process.

MyNevadaCounty - Winner 2002 E-Governance Award from the National Academy of Public Administration and the National Association of Counties. Nominated for Computer World Honors Program 2003

V. Recommended Strategic Initiatives for the Information Systems Tactical Plan

This section identifies strategic recommendations intended to address the issues/concerns resulting from both the ISSB discussions of foundation strategies and the Information Systems Administration Team (TEAM) analysis and assessment. The issues, identified from both the ISSB discussions and the TEAM process, are addressed in a consolidated set of recommendations. Further, for ease of discussion and presentation, the recommendations are grouped into topic areas. The original recommendations are presented in Appendix A and *in italics below*. The status of implementing these recommendations is also presented in the Appendix. Updated original recommendations (a reference to the original Recommendation number is provided in parentheses) and new recommendations are presented below.

The recommendations formulated by the TEAM are based on general knowledge of the industry, best practices in both the government and private sectors, and its understanding of the issues associated with the Nevada County environment.

A. Technology Implementation

The TEAM drew a series of conclusions related to technology implementations:

o There are three technology areas that clearly have immediate and broad strategic value to the County enterprise. These are 1.) E-government related technologies, 2.) Imaging/workflow/knowledge management and 3.) Geographic Information Systems (GIS).

o E-government, although driven by communications and web technologies, is a much more complex and comprehensive initiative. E-government represents the transformation of internal and business processes toward customer-centric process.

o A high level of management sponsorship, guidance, and oversight is warranted when implementing these strategic technologies.

Based on an update in status and progress by the ISSB and the TEAM, the following updated initiatives are recommended:

Clerk of the Board Office scanning Board resolutions, linking to Minutes and posting to website (PDF)

Recommendation 1. Given the broad and complex scope of E-government, the County should develop strategies for providing (see Recommendation 2) Youth Services, Student-Centered Education, Civic Engagement, Community Disaster Mitigation, Business Partnerships and Economic Development, and Independent Senior Services; and pursue the following E-government initiatives towards implementing these strategies.

a. *Utilize the Nevada County Technology Partnership (NCTP) to help identify issues and oversee the development of a comprehensive approach to our Nevada County E-government* strategies and *efforts.* The ISSB should provide oversight and advice to the Enterprise Technology Community of Interest (COI) as it manages and directs the implementation of the Citizen Relationship Management system and its underlying business process management (BPM) platform, the GIS Interactive map portal, the new County Website portal, video conferencing, new phone systems, and the on-line document management system (DocuShare).

b. *Utilize the NCTP to help establish a clear set of organizational roles and responsibilities for the E-government initiative.* The NCTP needs to develop a Charter template for COI use. The COIs need to tailor a Project Charter for each E-government initiative as each project is envisioned. Each Charter should contain a Roles and Responsibilities Matrix. At first, only high priority initiatives should be addressed.

c. Continue *investigating/establishing a Public/Private partnership(s) for E-government implementations*; complete hosting web sites for requesting cities within the County; continue leveraging existing County infrastructure in GIS and Website partnering with the Economic Research Council; complete building, with Northern Sierra Air Quality Management District grant funding, our website and video conferencing systems; and maintain partnerships with 3Com Corporation, Metastorm Inc., and Xerox, Inc.

Human Resources scanning on an all-in-one Xerox unit

d. *As part of a Technology Forum Program, emphasize management training in E-government related technologies and issues.* Management training programs will emphasize technologies and issues, such as process re-engineering, change management, project management, risk

assessment, customer support, and cost/benefit analysis. See Recommendation #12 for more details.

Recommendation 2. – In December 2000, the National Academy of Public Administration, the Center for Digital Government and *Government Technology* magazine teamed to conduct a workshop of federal, state, and local government officials, educators and non-profit and private sector professionals. (See 21st Century Governance, "A Guide to Citizen-Centric Government in the Digital Age", A Supplement to *Government Technology*, January 2001.) The focus was to develop a working set of principles to assist the transition of government from the Industrial Age to the Information Age. The participants focused on six areas of government activity. This recommendation is certainly in accordance with the Board of Supervisors' goals and priorities. The County should use this recommendation as a guideline to refine and implement the specific information technology strategies such as these six fundamental services.

1. Youth Services
   o Make information about social programs available to young people at life events.
   o Create a Web forum offering information about innovative youth projects under development to avoid unnecessary duplication of effort.
   o Focus efforts to use information technology to increase resources available to at-risk youth.
2. Student-Centered Education
   o Assure all technology is available to disadvantaged students.
3. Civic Engagement
   o Identify who is disengaged and why.
   o Educate agencies/departments to do business in a new culture of enterprise-wide structures, information sharing, and interagency collaboration.
   o Leverage information technology to help citizens understand how government works.
   o Continue to make access to government available through multiple channels.
   o Make government relevant to young people through information technology.
4. Community Disaster Mitigation

o Assure disaster mitigation based on citizen groups, government, and technology (e.g., GIS).
o Continue establishing and maintaining a public-private telecommunications collaboration to assure efficient and effective communications throughout a disaster.

5. Business Partnerships and Economic Development
o Develop plan to maintain citizen-centric focus and transparency in dealing with business.
o Identify likely new or existing industries and develop new public-private partnerships.
o Work with business to identify what services are needed.
o Develop risk awareness and management plans, and develop and conduct training programs for government staff and business staff.
o Educate the community about the benefits of information technology through sharing best practices.

6. Independent Senior Services
o Work with State and community organizations to educate seniors about resources available on the Internet.
o Develop Web content that addresses critical life events and allows seniors to access a variety of services.
o Create models of successful information technology programs and develop funding to replicate programs.
o Work through public-private partnerships to link seniors to information and services.

Recommendation 3. (Strategic Plan 2001, Recommendation 2). *Within the context of a Technology Forum Program and County information technology successes, continue implementing the more strategic technologies such as workflow, knowledge-management, and GIS.* Complete the Citizen Relationship Management (CRM) system implementation (see Recommendation 4), strategic workflow platform, and knowledge management expansion. Enhance GIS applications to include Human Services, Sheriff, Probation, Transit, and Assessor. Expand contract GIS services to other cities within the County. Develop detailed plans

for completing CRM, GIS enhancement, and knowledge management expansion.

Recommendation 4. (Strategic Plan 2001, Recommendation 3). Complete the *implementation of a Citizen Relationship Management System.* The County should review, design and implement new routines that will automate additional needed processes in other departments.

Recommendation 5. (Strategic Plan 2001, Recommendation 4). *Develop a formal replacement plan and schedule for the County's outside phone and radio systems.* The County has replaced and updated 100% of our telephone systems to date. Develop a formal telecommunications plan utilizing new infrastructure for communication throughout an emergency. (See Recommendation 1.)

Nevada County's new 3Com VoIP Network Phone systems

B.   Information Technology Investing

The Information Systems TEAM as well as the ISSB drew a series of conclusions related to current and future information technology investments. Among those conclusions are these:

- Funding for capital information technology investments is, and will continue to be, a significant challenge. In light of State and County budget constraints, new creative funding alternatives need to be identified for funding critical initiatives.
- Infrastructure must be kept current if we are to have the capacity required to support new applications and technologies. The infrastructure consists only of core technology items common to all County departments.
- Information technology projects/initiatives with the greatest return for the citizen and best implementation methodology should be given priority.

The following updated initiatives are recommended to help enhance our approach to information technology investing:

Recommendation 6. Complete and deploy the comprehensive security processes (See Appendix B for tactical details):

1. Security Policy Development & Implementation
2. Security Management
3. Backup & Restoration of Data
4. Disaster Recovery & Business Continuity

The Nevada County Security Policy (NCSP) is a general policy statement that indexes specific security policies and subjects; please refer to NCSP-001 "Master Security Policy" for details. Identify best practices for security lifecycle elements of

   a) Risk analysis and Audit Trails
   b) Network security and Physical Security
   c) System specific vulnerabilities
   d) End-User security training requirements

   e) Access controls

The NCIS Chief Information Security Officer should continue assisting the Human Services Agency with HIPAA (Health Insurance Portability and Accountability Act) compliance issues by advising the County of Nevada's Privacy Officer.

Recommendation 7. (Strategic Plan 2001, Recommendation 5). Continue *this plan's proposed information technology capital investment budgeting COI model.* Continue soliciting intense support of the County Executive Office and the Board of Supervisors, for continued focus on technology investment and alignment with Board and County strategic initiatives. The County should develop a tailored methodology to manage the capital investment portfolio based on industry best practice performance criteria, using the U.S. General Accounting Office (GAO) IT Performance Measurement Guide for information.

Main Rood Center Computer Room

Recommendation 8. (Strategic Plan 2001, Recommendation 6). *Establish a Standards Process to address technology re-investment issues.* The ISSB should evaluate the Investment Portfolio Management Systems of several Federal government agencies. The Systems were developed in accordance with the Clinger-Cohen Act of 1996. The Act describes the requirements and performance measures for evaluating the Return On Investment (ROI) of agency IT investments. The Act provides a set of guidelines that could be tailored for County use. The County should enhance the

methodology to include a process focusing on County technology re-investing issues. *Add ROI scorecard capability for evaluating proposed projects from a business and citizen perspective.* (**Strategic Plan 2001, Recommendation 7**). See GAO reference in Recommendation 7 above.

Information Systems Department   Project Services Division staff members

Recommendation 9. (Strategic Plan 2001, Recommendation 8). *Given suitable vendor and product choices, preference should be given to utilization of Off-the Shelf or purchased solutions (as opposed to in-house development) for new/replacement applications.* The ISSB should develop and deploy a policy for Off the Shelf procurements; and authorize and fund the Information Systems Department (ISD) efforts to refine the acquisition procedures for such procurements. The ISSB should continue the ban on any new legacy application development or enhancements that are not legally mandated.

Recommendation 10. (Strategic Plan 2001, Recommendation 9). *Develop the Information Systems Department Project Management capability with the goal of having all significant projects implemented under the direction of a qualified project manager.* All new IS projects are managed and coordinated by the new Project Services Division in the IS Department. This division is developing a comprehensive project management methodology "cook book" for all IT projects to follow. ISD will continue to further this goal by providing educational opportunities for these

managers in Project Management Certification, Risk Management and Change Management.

Recommendation 11. (Strategic Plan 2001, Recommendation 10). *ISSB and the Information Systems Department develop a Technology Refresh Program to address breadth of technology, infrastructure, and workstation/server issues.* The ISSB and ISD need to continue the refresh program and may be able to obtain Federal grant funding to implement the specific strategies in Recommendation 1. Prioritize existing candidates for replacement by risk severity and impact; and type of replacement technology required. Develop awareness-of-need-to-refresh presentation for marketing need and urgency of technology refresh program.

C.   Staffing and Knowledge Base

Staffing issues were of significant and specific concern to the TEAM. The major staffing conclusions derived from the discussions were:

- The technical staffs' knowledge in the emerging technology areas is very limited.
- The overall capacity of the staff to assume more implementation and ongoing support responsibilities does not exist.
- The need to increase the knowledge of and involvement in technology initiatives including the cost, benefit, and possible issues.

Recommendation 12. (Strategic Plan 2001, Recommendation 11). Develop a formal, ongoing Technology Forum Program using external consultants and internal staff with the twofold intent of a) providing foundation information to the technical staff on emerging technologies and b) increasing the information technology awareness of County management at all levels. Continue Part (a) implementation by developing an extensive list of vendor and industry and experts. The ISD should develop and conduct Part (b) as an off-site, intense workshop (consisting of 2 – half-day

sessions) to achieve maximum results with minimum interruptions. ISD should enhance the new communication plan to accommodate not only thematic programs, but also to set policies and procedures for major, high priority technology projects.

Rood Center Reward Training Room

Recommendation 13. (Strategic Plan 2001, part of Recommendation 12). Develop performance evaluation criteria for determining the efficacy of training material, measuring effectiveness and retentiveness of training material, and for measuring applicability of material to staff work. Refine *formal enterprise information technology-training program for technical staff with a range for training options and establish minimum skill set objectives.* Develop catalogue of training sessions and establish a schedule of training courses. Incorporate training matrix and skills assessment tools into personnel manuals.

Recommendation 14. (Strategic Plan 2001, Recommendation 13). The County should continue *Selective Outsourcing, while retaining project control,* and should *investigate creative ways to supplement our Information Systems Department staff by partnering with the private sector.* Develop an Outsourcing Plan to cover policies for types of outsourcing, procurement procedures, contractor performance tracking, contract administration, deliverables acceptance, knowledge transfer to County staff, and contractor evaluation. Continue strategic alliances with 3Com Corporation,

MetaStorm, Inc., and Xerox Corporation. The ISD should develop an aggressive grant proposal writing team to further assist the County in obtaining strategic funding for highly visible, complex projects which need to meet service needs (Recommendation 1) and/or State and/or Federal unfunded mandates.

D.   Foundation Strategies

As a result of their assessment of the foundation strategies, the ISSB supported several related recommendations. Some of these recommendations are incorporated in the above paragraphs. However, those listed below were identified and updated to help strengthen one or more of the basic strategies surrounding governance, organization and funding.

Recommendation 15. *Continue to explore opportunities for inter-jurisdictional cooperation and actively promote technology relationships with community stakeholders.* The County should continue to explore providing computer-related services to other jurisdictions within its borders. The County needs to leverage its relationship with the private sector (Economic Resource Council) to facilitate e-commerce grants.

Information Systems Helpdesk Operations

Recommendation 16. *Actively pursue and support relationships between the private sector and government to build a solid digital infrastructure for our community.* Enhance telecommunications

plans to accommodate high levels of communications between various communities throughout a disaster. *Pursue cable franchise contract negotiations as early as possible and involve community stakeholders.* Continue efforts to enhance digital communication in the Sierras through the newly formed Sierra Telecommunications Coalition, a seven county cooperative effort. As stated earlier in other recommendations, continue to leverage Website infrastructures (and hosting) and GIS to support the local efforts of the ERC.

Recommendation 17. *Through the ISSB, develop and implement information technology project performance metrics. Put in place project standards that define information technology project success and* *annually evaluate all major information technology projects to determine their performance and effectiveness.* The ISSB should authorize and fund the development of a performance metrics plan, a project standards policy and procedures, and a project oversight plan in accordance with government and industry best practices. This development effort should also include creating a supplemental training plan for instructing project managers, executive managers, and designated senior staff in the tailoring and implementation of the listed plans, policies, and procedures for individual project initiatives. This effort should also include completion of the "Project Cookbook" and identifying metrics for meeting the ROI IT Investment Portfolio Management performance objectives.

Information Systems Department Staff

Community of Interests Project Needs Assessments & Prioritizations

The following are the projects rated by each Community of Interest (COI). The higher the rank, the more important the system to the overall interest of the COI.

Internal Services COI
Strategic Project Rating

Rank	Description	Est. Time	Est. Cost
1	Image Enhancement of Pentamation	0-1 years	$50K
2	Workflow of Accounts Payable Application	0-2 year	$35K
		Total	$85K

Justice COI
Project Rating

Rank	Description	Est. Time	Est. Cost
1	Criminal Justice Case Management System	0-3 year	$75-150 K

Development & Environmental Management COI
Project Rating

Rank	Description	Est. Time	Est. Cost
1	Property Document Management	0-2 years	$10-50K
2	Property GPS Integration	0-2 years	$10-40 K
3	WEB Based Data Subscription Service	1-3 years	$10 –25K
4	Property Assessment and Tax System	1-3 year	$750K–1.2M
		Total	$780K-1.3M

Enterprise Information Management COI
Project Rating

Rank	Description	Est. Time	Est. Cost
1	Personnel Computer Refresh Program	Annually	$150-250K
2	E-Government Strategic Plan	0-1 year	$25K
3	Technology Roll-Out Program	0-1 year	$60K
4	Enterprise Records Management	Annually	$100K
5	Virtual Meetings	0-2 years	$10K
6	GPS Integration	0-2 years	$30K
7	Improve Wireless Infrastructure	0-2 years	$10-50K
8	GIS Infrastructure	1-2 years	$40K
9	Board Chamber Improvements	0-2 years	$60K
		Total	$425-625K

Public Safety COI
Project Rating

Rank	Description	Est. Time	Est. Cost
1	Sheriff's CAD/RMS Software Applications	0-1 year	$250K

Community & Social Programs COI
Project Rating

Rank	Description	Est. Time	Est. Cost
1	Voting Modernization Upgrade	0-3 years	$1M
2	Replace HSA Records Systems	0-2 years	$350K
3	Library technology Update Plan	0-2 years	$50-150K
4	AFS DocuShare Scanning	0-1 year	$10K
		Total	$1.4M-1.51M

VI.   Information Systems Steering Board's Overall Countywide Project Prioritization List

The ISSB determined the project priority for all COI projects by applying a broader countywide perspective based on such factors as business impact and customer services needs.

Information Systems Steering Board
Overall Project Rating For Next Five Years

Rank	Description
1	DA and PD Case Management Systems
2	Sheriff's CAD/RMS systems
3	Enterprise Records Management
4	Voting Modernization upgrade
5	Technology rollout
6	Personal computer refresh program
7	Property Assessment and Tax System
8	E-Government strategy
9	Web based data subscription service
10	Image enhancement of Pentamation
11	Property Document Management
12	Property GPS Integration
13	GIS Infrastructure
14	GPS integration
15	Library Technology Update Plan
16	Replace current records systems (HSA)
17	AFS DocuShare scanning
18	Virtual meetings
19	BOS Chambers Technology Improvements
20	Improve Wireless Infrastructure
21	Workflow of the Accounts Payable application

Appendix A: Status and Progress of 2001 Plan Recommendations and Projects

The Status and Progress of the Recommendations of the original Plan are presented below. The original Recommendations are referenced to the Supplement Section VII body either as an explicit reference to a different recommendation number or implicitly as a reference to the recommendation of the same number. In Section VII, original recommendation wording is shown in italic font.

A.   Technology Implementation

The TEAM drew a series of conclusions related to technology implementations:

o   There are three technology areas that clearly have immediate and broad strategic value to the County enterprise. These are 1.) E-government related technologies, 2.) Imaging/workflow/knowledge management and 3.) Geographic Information Systems (GIS).
o   E-government, although driven by communications and web technologies, is a much more complex and comprehensive initiative. E-government represents the transformation of internal and business processes toward customer-centric.
o   A high level of management sponsorship, guidance, and oversight is warranted when implementing these strategic technologies.

Recommendation 1. Given the broad and complex scope of E-government, the County should pursue the following E-government initiatives.

a.   Utilize the Nevada County Technology Partnership (NCTP) to help identify issues and oversee the development of a comprehensive approach to our Nevada County E-government efforts.
     [Status: The Enterprise Technology Community of Interest (COI), under the direction of the ISSB, has taken the lead on managing and directing Digital Government projects. To date, the COI is responsible for the Citizen Relationship Management system and its underlying business process management (BPM) platform, the GIS Interactive map portal, the new County Website portal, video conferencing, new phone systems, and the on-line document management system (DocuShare).**]**
b.   Utilize the NCTP to help establish a clear set of organizational roles and responsibilities for the E-government initiative.
     [Status: the recommendations still need to be fully developed and implemented. It will be included in the updated recommendation 1b.**]**
c.   Investigate/Establish a Public/Private partnership(s) for E-government implementations.
     [Status: Several projects are underway for collaborating with public and private partners. Nevada City will soon be hosted on our new website platform and is already interconnected with the County email collaboration system. Grass Valley and Truckee are currently evaluating similar proposals. The IS Department has partnered with the Economic Resource Council on two grant projects to leverage the County's existing investments in GIS and Website infrastructures to benefit the community. For three years, the IS department has worked with the Northern Sierra Air Quality Management District receiving four individual grants totaling $195K to build our websites and implement video conferencing systems. Private strategic partnerships have been formed with three top vendors in 3Com Corporation, Metastorm, Inc., and Xerox, Inc. These private-public partnerships have benefited Nevada County with over $300,000 in donated equipment and professional services.**]**
d.   As part of a *Technology Forum Program* emphasis management training in E-government related technologies and issues.
     [Status: The management training program has just recently been launched and needs further development, please see recommendation #11 for more details.**]**

Recommendation 2. *(See Recommendation 3 in Supplement Section VII).* Within the context of a *Technology Forum Program*, place early emphasis on the more strategic technologies such as workflow, knowledge-management, and GIS.
[Status: A Business Process Management platform was purchased to implement the number two countywide project priority for a Citizen Relationship Management (CRM) system. Through this one time investment, the County now has a strategic workflow platform that can be used to automate hundreds of business process. In addition to a CRM system, new processes for the help desk, project tracking, and electronic timesheets are being developed.   Other processes for board agenda management, employee leave requests, and minute order tracking are being evaluated for future automation. Knowledge management has been implemented through the expanded use of our DocuShare document management system. The system now contains thousands of documents. Through matrix management teams, collaborative work environments have been created to capture documents, calendars, discussions, and provide instant notification to team members. Department's now have information portals that organize and provide quick access to resources for their staff such as forms, files, on-line resources, directories, calendars, and electronic reports.   The County's GIS capabilities have expanded from client side desktop programs to online interactive maps for the public and enhanced web based application for County staff. The use of GIS has increased from the Planning and Transportation departments to include, Human Services, Sheriff, Probation, Transit, and the Assessor. The Elections Department successfully used GIS for our County's redistricting process, running live interactive scenarios for the Board in session. This year the City of Grass Valley contracted with the County for 100% of their GIS services. Other customers have increased their usage of services.**]**

Recommendation 3. *(See Recommendation 4 in Supplement Section VII).* Expedite the implementation of a Customer Relationship Management System.
[Status: In January 2002, the County purchased a Business Process Management platform to implement a Citizen Relationship Management (CRM) system. Currently four routines have been developed and are being used and tested for Department of Transportation, Animal Control, and the Agriculture Commissioner. These routines should be available for direct public use shortly.**]**

Recommendation 4. *(See Recommendation 5 in Supplement Section VII).* Develop a formal replacement plan and schedule for the County's external phone and radio systems.
[Status: Over the past 18 months, the County replaced the legacy telephone systems with state-of-the-art 3Com networked phone systems. November 2002 marked the last legacy conversion with the Truckee Joseph Center converting to the new systems. The County has replaced and updated 100% of our telephone systems.**]**

B.   Information Technology Investing

The Information Systems TEAM as well as the ISSB drew a series of conclusions related to current and future information technology investments. Among those conclusions are these:
- Funding for capital information technology investments is, and will continue to be, a significant challenge.
- Infrastructure must be kept current if we are to have the capacity required to support new applications and technologies. The infrastructure consists only of core technology items common to all County departments.
- Information technology projects/initiatives with the highest payback and best implementation methodology should be given priority.

The following initiatives were recommended to help mature our approach to information technology investing:

Recommendation 5. *(See Recommendation 7 in Supplement Section VII).* Implement this plan's proposed information technology capital investment budgeting COI model for FY01/02.
[Status: This investment/budgeting strategy was immediately implemented for the FY01/02 budget year. The strategy has been fully supported by the County Executive Office and the Board of Supervisors.**]**

Recommendation 6. *(See Recommendation 8 in Supplement Section VII).* Establish a Standards Process to address technology re-investment issues.
[Status: A project evaluation and prioritization form has and is being used for all project submissions. It could use more project criteria elements. This will be a recommendation going forward.**]**

Recommendation 7. *(See Recommendation 8 in Supplement Section VII).* Establish ROI (return on investment) scorecards that evaluate proposed projects in a business and citizen ROI perspective.
[Status: This recommendation has not been completed. The new recommendation will include this element. (Rolled into new Recommendation 8, in Section VII above).

Recommendation 8. *(See Recommendation 9 in Supplement Section VII).* Given suitable vendor and product choices, preference should be given to utilization of Off-the Shelf or purchased solutions (as opposed to in-house development) for new/replacement applications.
[Status: All new software investments over the past two years have met this requirement. Also, the ISSB has placed a ban on any new legacy application development or enhancements that are not legally mandated.**]**

Recommendation 9. *(See Recommendation 10 in Supplement Section VII).* Develop the Information Systems Department Project Management capability with the goal of having all significant projects implemented under the direction of a qualified project manager.
[Status: In January 2001, the Information System department was authorized for two additional staff positions. In July 2002, a third position was allocated. All three of these positions comprise the new Project Services Division in the IS Department.   All new IS projects are managed and coordinated by this division which is developing a comprehensive project management methodology "cook book" for all IT projects to follow.**]**

Recommendation 10. *(See Recommendation 11 in Supplement Section VII).* ISSB and the Information Systems Department to develop a Technology Refresh Program to address breath of technology, infrastructure, and workstation/server issues.
[Status: A technology refresh program was designed and priced for the FY02/03 budget year. The program was deferred for the budget cycle due to uncertainties from the economy and State funding projections. While we avoided expenses for one year, our targeted critical users' PC systems that need replacement (number about 220) are now one year older. As new software applications and servers come on-line, these systems may not be able to run them.**]**

C.   Staffing and Knowledge Base

Staffing issues were of significant and specific concern to the TEAM. The major staffing conclusions derived from the discussions were:

- The technical knowledge in the emerging technology areas is very limited.
- The overall capacity of staff to assume more implementation and ongoing support responsibilities does not exist.
- The need to continue to increase the knowledge of and involvement in technology initiatives by the County's management team including the cost, benefit, and possible issues.

Recommendation 11. *(See Recommendation 12 in Supplement Section VII).* Develop a formal, ongoing Technology Forum Program using external consultants and internal staff with the twofold intent of a) providing foundation information to the technical staff on emerging technologies and b) increasing the information technology awareness of County management at all levels.
[Status: Part of (a) of this recommendation has been implemented. Vendors and industry experts have trained IS staff on a regular basis. Part (B) is just beginning to take form. However, it is very challenging to get County Managers and staff to focus on technology possibilities during their own day-to-day work duties. The IS Department has developed and is implementing a new communication plan that incorporates our "Year of the Customer" and "GET IT!" programs. These campaigns were launched in July of 2002 at an all Department Head meeting.**]**

Recommendation 12. *(See Recommendation 13 in Supplement Section VII).* Develop a formal enterprise information technology-training program for technical staff with a range for training and establish minimum skill set objectives.
[Status: The Information Systems Employee Development task force has recently accomplished this recommendation. The task force developed a training matrix of four core areas for each IS job classification. A skills assessment tool was developed and is being implemented to inventory skills and outline annual training goals for staff. Training requirements are mapped with skills to job duties and areas of expertise. The training matrix was also linked to operational needs and department objectives. The next phase will be to link performance evaluations with the training goals.**]**

Recommendation 13. *(See Recommendation 14 in Supplement Section VII).* Selective Outsourcing- while retaining project control, investigate creative ways to supplement our Information Systems Department staff by partnering with the private sector. Further utilize the outsourcing opportunities to train and develop County staff.
[Status: This is an on-going initiative and strategy for the IS department. For examples: The new phone systems where purchase and installed through a strategic partnership with 3Com Corporation. The County received over $185,000 in equipment and professional services to assist our networking staff.   The development of our website has been funded by grants which provided a temporary webmaster position for the past two years. At any time, the IS department utilizes 2-3 part time ROP interns to help with websites and computer service work.   We strategically partnered with Metastorm, Inc, the supplier of our CRM software, and they provided over $20,000 in free labor to develop our electronic Time Sheet routine. The IS department has also used CALWORKS staff for general office administrative support.**]**

D.   Foundation Strategies

As a result of their assessment of the foundation strategies, the ISSB supported several related recommendations. Some of these recommendations have already been incorporated in the above paragraphs. However, those listed below were identified to help strengthen one or more of the basic strategies surrounding governance, organization and funding.

Recommendation 15. Continue to explore opportunities for inter-jurisdictional cooperation and actively promote technology relationships with community stakeholders.
[Status: Currently the IS Department provids some level of computer related services to each of our three cities. Nevada City has contracted for full computer and network support services. Grass Valley currently receives GIS services and the City Council authorized the City Administrator to explore outsourcing their technology needs to the County. The Town of Truckee currently receives law enforcement data services via our network connection. The Town manager has recently met with IS department staff to discuss outsourcing possibilities. This year the IS department applied for and received a grant to place video conferencing equipment at the Truckee Town council chamber and the Board chambers allowing eastern county citizens and staff to participate in western county meetings. A private-public relationship has been built with the Economic Resource Council (ERC) enabling two e-commerce technology grant awards. Both will leverage County IS resources and infrastructure for the community.**]**

Recommendation 16. Actively pursue and support relationships between the private sector and government to build a solid digital infrastructure for our community. Pursue cable franchise contract negotiations as early as possible and involve community stakeholders.
[Status: The IS department has formed a cooperative alliance with Nevada City, Grass Valley, Sierra College and the Nevada County Superintendent of Schools to jointly negotiate and fund our common Comcast cable TV franchises. As part of the work with the ERC, the Chief Information Officer (CIO) is a member of the ERC's telecommunication task force and helped launch newly formed Sierra Telecommunications Coalition, a seven county cooperative effort to enhance digital communication in the Sierras. The IS Department will be leveraging GIS and Website infrastructures to support these local efforts through the ERC.**]**

Recommendation 17. *(See Recommendation 8 in Supplement Section VII).*   Through the ISSB, develop and implement information technology project performance metrics. Put in place project standards that define information technology project success and annually evaluate all major information technology projects to determine their performance and effectiveness.
[Status: This recommendation has yet to be implemented and is included in the new recommendations.**]**

E.   ISSB Recommendations

The ISSB endorsed a set of recommendations during the assessment session. These recommendations, along with those derived from the Technical Direction process, have been combined into one set and are presented in this document as countywide priorities. These priorities establish the need to develop tactical plans that implement the strategic focus of the recommendations presented in Section VII of this Plan Supplement.

Information Systems Steering Board
Overall Project Rating For Next Five Years

Rank	Description	[Status: November 2002]
1	Accounting System (With Time Mgt., HR,PR)	Purchased the Pentamation system, currently implementing, go live fully July 2003
2	Citizen Relationship Mgt.	Purchased, in use internally in five departments
3	Telephone System	Purchased – legacy system 100% replaced
4	Sheriff Radios	Purchased, towers installed, vehicles installed.
5	Digital Records (space)	Expanded capacity on DocuShare document management system, CDA major scanning project in progress for property records. Electronic reports for Auditor eliminating hard copy "green bar" reports.
6	Geographic Information Systems (GIS)	Intranet/Internet platform implemented, two public portals and one internal portal developed
7	Web-enabled services (CDA permitting)	Purchased, project team formed and planning, implementation started March 2003.
8	Human Resources systems	Purchased, part of #1, went live with first Payroll run January 2003.
9	Fleet Mgt	Purchased, part of #1
10	Justice Workflow	Has been on hold due to Courts and AOC restructuring. Courts selected and requested the purchase of a new Case Management System. County justice departments are evaluating this and other systems for purchase recommendation.
11	Fixed Assets	Purchased, part of #1.
12	Surplus Mgt.	Maybe handled with project #1. Purchasing has also been using DocuShare to catalog and make available to the public digital photos of all surplus equipment before auctions.
13	Network Infrastructure	Partially complete. Most electronics/switches have been updated. Cooper wiring upgrades have been approved and funded and are being implemented.
14	Video Conferencing	Mostly complete. Each major County facility now has a video conferencing unit. IS just received a grant to place units into the Truckee and Board chambers. Infrastructure improvements to support video should be fully completed in 90 days.
15	Property Tax system	The Tax Collector and Assessor are currently evaluating available systems. Due to the heavy workloads placed on the ISD by projects #1, #2, and #7, the department cannot expend resources on this project until Fall 2003.

Information Systems Steering Board
Project Rating For 2000-2002

Rank	Description	Cost	Budget	[Status November 2002]
1	WAN/LAN	$125K	General Fund	Mostly Complete
2	IS Staff	$100K	General Fund	Complete –Project Services division formed
3	Customer Relations Mgt.	$200K	General Fund	Purchased, partially implemented
4	Collections	$20-30K	General Fund	No action
5	Digital Records (space)	$20-30K	General Fund	In progress
6	Auction	$7-10K	Dept Budget	No action
7	CDA Permitting	$250K	Dept. Unbudgeted	Purchased, in process
8	GIS	$45K	General Fund	Complete
9	Telephone System (Courts, Child Support – VoIP)	$150 K	General Fund	Complete
10	Sheriff Radio	$2 Mill	Grant	Purchased, in process
11	HSA Central Intake	$6K	Dept Budget	Completed
12	County Internet Web Sites	$60K	Grant	Mostly complete
13	Elections Automation	$10K	Dept. Budget	Completed

F.   Information Systems Department's Accomplishments to Date

[Information Systems achievements as published in County budget documents]

FY02/03 to date:

- ❑ The IS department successfully negotiated with Xerox to reduce the DocuShare (our main document imaging and management system) software version upgrade fee from an originally invoiced total in excess of $30,000 to zero cost, saving the county this expense.   The DocuShare infrastructure has been expanded and a test platform developed.
- ❑ Document scanning and management abilities have been increased and expanded in the Clerk of the Board Office, Human Resources, Child Support Services, Assessor, and the Community Development Agency.
- ❑ Implemented new county Website design and technology infrastructure. Our Website recently won an E-Government award from NAPA and NACO.
- ❑ Expanded delivery of public documents to our citizens via our MyNevadaCounty.com website. This project was recently nominated for a Computer World Honors Program.
- ❑ Departmental Portal sites have been created for most internal service departments.
- ❑ Improved and expanded "Budget Home Page" for citizen and staff usage.
- ❑ IS staff have been trained in the use of the new Eworks workflow system.   A three-stage test environment has been put into place to test and deploy the new routines.
- ❑ In-house CRM capabilities have been developed for Department of Transportation, Agricultural Commissioner, Animal Control and the Assessor.
- ❑ A "Projects" tracking routine has been developed for the CEO's office.
- ❑ The NCTP with the Information Systems Steering Board, Communities of Interests, and Business Solution Teams have been meeting regularly and producing significant work products.
    - o Updated the County's "Enterprise Information Technology Strategic Plan".
    - o Overseeing the implementation of major projects:
        - ▪ Pentamation Financial Accounting System replacement
        - ▪ Encompass Land Management System
        - ▪ Document Management best practices
        - ▪ Website technologies
        - ▪ GIS projects and technologies
    - o On going governance of countywide IS issues.
- ❑ Purchased the Financial Application software suite in July 2002.
- ❑ Established countywide financial application implementation project team "PIT Crew". Providing team with project management training, guidance, and ongoing project management services.
- ❑ Payroll system module went live January 2003.
- ❑ Application Server farm and database server implemented February 2003.
- ❑ New county budget entered in system March 2003.
- ❑ All accounting users trained and system deployed by June 2003.
- ❑ System ready for go live date July 1, 2003.
- ❑ Completion of phasing out the countywide legacy telephone system with new VoIP 3Com NBX telephone systems. The facilities that received these telephone systems are ERAC, Nevada City Library, Odyssey House, WBCF, Court House, HEW, Truckee, Probation, Transit, and DOT Yard.
- ❑ Implemented advanced software features on telephone switches to enable enterprise features such as countywide four digit dialing, voice mail transferring between locations, and virtual tie lines to reduce long distance costs. Negotiated over $80,000 in newly donated software from 3Com Corporation for the project through our continued mutually beneficial partnership.
- ❑ Launched the "Year of the Customer" customer service campaign and presented the program to the County Department Heads in July 2002.
- ❑ Increased on-site instructor lead software training classes for County employees.

❑ Launched departmental communications plan to organization; "GET IT! – Governmental Excellence Through Innovative Technology, to increase countywide awareness of IS services, resources, and policies.

❑ Started "Tips and Tricks" emails campaign in January 2003.

❑ Continued internal departmental team building workshops to improve customer service awareness and skills.

❑ Implemented numerous unscheduled, unplanned projects for County Departments as "urgently" requested.

❑ Developed and installed a technician work bench area.

❑ Developed and installed a test/development technical area.

❑ Replaced a water fire suppression system with a Inergin fire suppression system in the computer room.

❑ Increased the UPS capacity by 100% in the computer room.

❑ Upgraded all in-house communication wire from Cat3 to Cat 5 or 6 (current industry standard).

❑ All Computer Service Technicians are able to perform voice communication tasks. Previously this was a specialized position.

❑ Implemented ability to monitor and control Internet traffic usage.

❑ Assisted in the development of statewide county IT security best practices document, adopted practices and applied to Nevada County IT security procedures and forms.

❑ Installed remote network monitoring/diagnostic units in all data closets.

❑ Project Management Principles put into practice.

❑ Created client chaired implementation teams.

❑ Retired the "X1" minicomputer from service.

❑ Synovation (Cases Application) implementation for Probation Department.

❑ Implemented new CLETS law enforcement servers for the Sheriff.

❑ Implemented a new web-based Electronic Time and Attendance system leveraging our existing CRM investment infrastructure and receiving over $20,000 in free professional services from our vendor.

❑ Implemented data communication abilities with Nevada City.

❑ Assisted Child Support Services with their 12 county video conferencing project.

❑ Implemented video conferencing between the Board Chambers and the Town of Truckee enabling public participation in meetings. Received a $55,000 grant to fund this project.

❑ Helped develop and are hosting a private-public partnership project with the Economic Resource Council for a GIS based business portal.

❑ Implemented IS staff classification training matrix, skill assessment tool, and on-line training program.

FY01/02

❑ Reorganized customer service staff to provide full time coverage of the Helpdesk.

❑ Developed a full multi-media training room facility; increased onsite training classes.

❑ Upgraded and re-engineered the Rood Center's core data/voice network infrastructure.

❑ Implemented video conferencing units in each major County location.

❑ Automated the "Budget Process" with a portal, providing instant updated budget information, forms, and instructions to countywide staff.

❑ Installed "state of the art" Voice Over IP telephone systems in the Rood Center, NC Library, HEW complex, Loma Rica yard, Juvenile Hall and the Jail.

❑ Developed IS staff skills in the areas of new Internet technologies, security, networking protocols and SQL databases.

❑ Continued our successful high school internship program.

❑ Supported two private-public grant projects with the Economic Resource Council to expand our County's digital infrastructure and build a GIS based business portal by leveraging existing County resources.

❑ Successfully facilitated the Nevada County Technology Partnership decision making process to reach decisions and countywide consensus on major technology investment projects; phone system replacement, data/voice infrastructure improvements, citizen relationship management system, PC replacement funding for Behavioral Health, cost accounting system for DOTS, and the selection and purchase of our new financial accounting system.

❑ Successfully supported 1200 employees' daily technology support needs with their 900 computers, 60+ servers, 1200+ phones, and 50+ major critical service applications.

❑ Implemented a new updated professional appearance to the County website, utilizing a new "information architecture" (IA) to locate governmental and community services.

❑ Implemented a new electronic time sheet/tracking system.

❑ Successfully migrated all major legacy applications (50+) off of the legacy "X1" mini-computer onto the new state-of-the-art "TAZ" computer system.

❑ Assisted Verizon Wireless in implementing a new cellular tower above the Rood Center.

❑ Implemented internal cross-divisional staff task forces to enhance operations; Change Management, IS Staff Development, and Customer Service.

❑ Purchased and started phased implementation of a new citizen relationship management system.

❑ Worked with AT&T Broadband to install fiber optic cabling to the new Juvenile Hall for no labor cost eliminating the need to purchase a new dedicated phone system for the Juvenile Hall and enabling high-speed data access to the facility thereby saving long-term monthly Pac Bell communication costs.

❑ Leveraged departmental knowledge and skills to assist our other regional and local governmental partners with technology services and expertise (Nevada City, Town of Truckee, Plumas, Tuolumne & Madera Counties, School Districts, CSAC, etc).

❑ Received "Honorable Mention" on two CSAC Challenge Award entries.

FY00/01

❑ New mailboxes were established to enable citizens to direct their questions to the County's technical staff and to the County's Office of Administration.

❑ Established a fully interactive bulletin board for citizens to provide comments and input to the public policy and decision-making process.

❑ Set up a Xerox Corporation DocuShare system as a repository for posting items of interest (Air Park documents, County codes, information on Natural Heritage 2020) for public viewing over the Internet.

❑ Developed the capacity to publish real-time Elections results utilizing the County Intranet/Internet infrastructure and staff.

❑ Posted links on the County Internet sites so citizens can interact on particular issues.

❑ Set up a Xerox Corporation's DocuShare system as a repository for archiving documents, posting items of interest, and communicating both internally and externally. This system allows for sharing documents, assigning/scheduling and monitoring tasks, group collaboration and editing of documents.

❑ Employees now have the ability to easily telecommute using DocuShare and other technologies. Any documents (or other types of pictures, sounds or applications) that are posted to accounts with the proper level of access may be accessed easily from any remote location through the Internet.

❑ Developed and utilized the capacity to publish documents in a "PDF" format to greatly increase the efficiency of downloading large documents to the public over the Internet (Information Systems Department Nevada County Technology Partnership Strategic Plan 2001, Feasibility Study of Expanding County Services Through the Internet). The "PDF" format also allows for key word indexing and searching.

❑ Developed Internet web presence for all Nevada County departments.

❑ The Clerk of the Board web page now has agenda items linked to it through DocuShare.

❑ Established Intranet capability for sharing information between Court employees and between Information Systems Department employees. This is the prototype for other departments.

❑ Through the Justice Community of Interest, began the design of a County Intranet capability to electronically transfer documents between the Sheriff's Dept., the District Attorney's Office, the Courts, and the Probation Department.

❑ Formed the Nevada County Technology Partnership, which established five organizational levels of input (Users, Departmental/Community of Interest, Steering Board, Citizen's Advisory Group, Business Solution Teams) to provide strategic direction and group decision-making capability for the County's information technology planning process.

❑ Established a Community of Interest based model for prioritizing and funding information systems technology.

❑ With the assistance of the Nevada County Technology Partnership, completed the IS Strategic Plan.

❑ Established a document imaging and indexing business solutions team with citizen's participation to advise the County on technology, procedures, and cost of implementing large scale document imaging and indexing.

❑ Implemented the methodology and technical capacity to convert the County's "green bar reports" into a format that may be electronically stored and transferred. Also developed the capability to scan archived reports so they can be stored electronically.

❑ Installed a new Jail Management System.

❑ Began implementation of the Sheriff's new Computer Aided Dispatch System.

❑ Installed a "state of the art" Voice Over IP telephone system in the Sierra Nevada Regional Department of Child Support Services.

❑ Chosen as a beta site for the next generation on Voice Over IP being developed by 3Com Corporation (NBX 750).

❑ Instituted the use of electronic direct deposits to vendors through electronic fund transfers.

❑ Instituted computer based training in-house over the Intranet.

❑ Started a high school internship program

Appendix B: Information and Communications Systems Security Policy

A. Introduction

Since Nevada County Information Systems Department (NCIS) published the last Strategic Plan in the year 2000, there have been many technological changes both internally in the County and in the "world at large". We've experienced a national security crisis in the form of the 9/11/2001 attacks, HIPAA compliance is looming large for State and Local governments, there has been a tremendous increase in hacking attacks against NCIS computing systems, and our County network is continually being connected to networks of other governmental entities (city, local, state, federal) and private companies. This increase in network connectivity, hacking attacks, and the pending regulatory requirements of HIPAA aggregate to develop an extremely challenging and complex environment in which to practice the art of security. NCIS has responded to the information security requirements as mandated by the Board of Supervisors budget resolution B99-02 by implementing the following:

- Creation of the Chief Information Security Officer (CISO) position, which is assigned to a Network Systems Analyst with specialized security training.

- Policy Development: Streamlining the development of the Nevada County Security Policy/Procedure (NCSP) by adopting a Request For Comment (RFC) forum in which County employees may review and comment on select NCSP security documents that are pending adoption.

- Policy Guidance: NCIS has adopted the California County Information Services Directors Association *California Counties "Best Practices" Information Security Program* as a general guidance.

- Risk Analysis: NCIS performs both long term and ad hoc risk analysis and vulnerability testing to identify the systems and processes at highest risk and takes corrective action accordingly.

- HIPAA: The NCIS Chief Information Security Officer is assisting the Humans Services Agency with HIPAA compliance issues by advising the County of Nevada's Privacy Officer.

- Infrastructure: NCIS has upgraded and replaced many of the County's servers, network switches, and other associated equipment and software.

- Data Integrity: The Tripwire data integrity validation software has been installed on many of the servers that perform process critical county functions.

- SHADOW IDS: The SHADOW Intrusion Detection System (IDS) has been deployed to monitor Internet traffic outside the County DMZ (<u>Dem</u>arcation <u>Z</u>one) which is used in digital forensic investigations.

Security as a practice: There is no "silver bullet" that will protect the County's data, computing, and communication systems as security requirements change frequently. The creation of the Chief Information Security Officer position, adoption of the Request For Comment (RFC) based policy development, and the adoption of the California County Information Services Directors Association *California Counties "Best Practices" Information Security Program* (see attached) as a general guidance has streamlined NCIS's ability to develop a comprehensive security program.

The following sections describe the NCIS information security program in greater detail:

- Security Policy Development and Implementation
- Security Policy Enforcement
- Backup and Restoration of Data
- Disaster Recovery and Business Continuity

B. Security Policy Development and Implementation

While Nevada County has a large investment in both its physical computing and communication systems, the greatest value lies in the data stored on these systems. A continuing strategic objective of Information Systems is to institute policies and procedures that will protect that data. To this end the Nevada County Security Policies/Procedures (NCSP) are currently being developed based on the Open Source communities Request For Comment (RFC) process which allows for input from County employees. This process allows policies to reflect the requirements of our diverse end-user population. Following is the workflow of the NCSP policy development and adoption process:

1. The CISO determines a general security policy need by taking input from both County employees, industry research, input from the public (both individuals and corporate) and drafts an NCSP and assigns it a unique identifier and updates the NCSP-001 Master Security Policy. Some of the issues that are considered during policy development are:
   a. Risk analysis and audit trails
   b. Network security and physical security
   c. System specific vulnerabilities
   d. End-User security training requirements
   e. Access controls

2. In all cases the <u>draft</u> NCSP documents are posted in their respective DocuShare collection areas for a minimum of 2 review periods of 15 days. Additional 15 day review periods may be added if the CISO determines a need to do so.

3. After the review period expires, and CISO determines that the document is viable, the following steps are taken:

   a. For Public Access and County Employee Access policies: all drafts are posted in a DocuShare collection area where the Information Systems Steering Board (ISSB) and general County employees may review for 2 periods of 15 days. The ISSB may reject or return for modifications. If the ISSB is satisfied with the policy they need do nothing and it will be automatically adopted and moved to the associated DocuShare policy collection area.
   b. For NCIS Accessible and NCIS Restricted policies: the CISO, CIO, and other specifically designated security personnel review draft documents internally at NCIS. Note: These are internal NCIS policies, which deal with internal systems configurations and, for security reasons, are not to be released outside of NCIS. The review process is as mentioned above.

4. Upon final acceptance of the NCSP draft document it is renamed and the word "draft" is removed. The policy is then posted on DocuShare in a category specific draft document collection area; the access to these DocuShare collections are controlled according to the subject matter and fall into the following categories:

   a. Open Access Policies: Open to all employees and the general public.
   b. County Access Policies: Open to all County employees.

    c.   NCIS Accessible Policies: Open to all NCIS employees.

    d.   NCIS Restricted Policies: Open to all NCIS designated security personnel.

C. Security Policy Enforcement

Security policy enforcement is the translation of a security policy to procedures and the processes that implement it. These policies and procedures guard against improper use of equipment, data files, and software by discriminating between authorized and unauthorized individuals. Security policy enforcement may use all the following techniques:

- Limit physical access to buildings and equipment.
- Devices such as authentication, encryption, firewalls, scanning tools, secure dial-in devices and virus detection software.
- A password or authentication system that eliminates easy access to systems or networks.
- Intrusion Detection Systems (IDS) that can provide digital forensic capabilities.
- Evaluation of weak points in the security system by performing security audits on a regular basis.
- Training all information technology staff on security techniques and behavior.
- Maintenance of logs to provide an audit trail of access history.

D. Backup and Restoration of Data

Currently all system critical NCIS managed servers are backed up on a nightly and weekly basis. A strategic objective of Information Systems is to institute a process whereby data on departmental servers is transferred on a regular basis to Information Systems Department mass-storage devices and integrated into Information Systems' regular backup and restore process. In addition, Information Systems Department will recommend a n ISSB policy directing that end users save all working data to their respective departmental servers (i.e. end-users are NOT to keep working files on their local PCs). In this way all vital County data will be protected by a comprehensive backup and restoration policy.

Departmental servers (or stand-alone PC's) are required to meet minimum backup/ recovery standards as specified in the NCSP. This minimum standard includes (but are not limited to) the following basic elements:

    1)   Nightly backup of all relevant data

    2)   Weekly backup of the operating system (when applicable)

    3)   Monthly verification of correct restore functionality

    4)   Daily rotation off-site of backups

E. Disaster Recovery and Business Continuity

The NCIS department is working on a comprehensive disaster recovery and business continuity plan and recognizes the following basic elements:

1. Integrated Risk Management - This is the unified control and protection of all County assets. These assets can normally be segmented into four key units: facilities, technology, information, and human resources. To ensure protection of County assets a risk analysis must be performed which will quantify, in financial terms, the costs and benefits of risk reduction measures.

2. Countywide date recovery strategy - A recovery strategy that encompasses the County's entire information technology framework is required. This strategy should include an analysis that assesses each region of the County, from the host-based environment to all distributed platforms. This recovery strategy should provide or identify:

o   Critical business processes, resources and applications.
o   Sequence and time frame of application recovery.
o   Required data and its associated currency.
o   Cost of an outage.
o   Primary resource requirements.
o   Service requirements for recovery availability and response time.
o   High-availability demands.
o   Network recovery mode requirements.

Appendix C: Geographic Information Systems (GIS) Enterprise Strategic Plan

A. Introduction

Objective

There is wide agreement within the County of Nevada that Geographic Information System (GIS) is a proven information technology system essential to delivering a broad spectrum of local government services. While the GIS Division has been functioning for over 10 years, the remaining question is how to improve the information systems and the organizational infrastructure necessary to support continuing successful enterprise implementation of geographic information. The objective of this report is to provide the County of Nevada and its data partners with a three-year strategy to effectively continue the implementation of the enterprise GIS.

Background and Activities Completed During Phase I

Over the past several years, the County of Nevada has made great strides in advancing the use of Geographic Information Systems (GIS) within the County. Aerial photographs for the entire county, database records, images and Computer Aided Design (CAD) drawings can all be incorporated into a GIS application via the assessor parcel number key field. Some of the most significant accomplishments are listed as follows:

♦ **Internet GIS (iGIS) Applications:** The creation of an inter and intranet based GIS application has brought GIS to virtually every desktop in the County as well as to the public through development of the iGIS application. This has given the public access to parcel level data, road information as well as planning information regarding zoning and the General Plan. This is an enormous step forward in supplying the public with data. It should prove to save time for County staff that currently answer questions over the phone or at the public counter.   After eight years of data gathering and input, the GIS Division is a excellent example of how many departments have pooled their financial resources together and developed an enterprise system that uses shared data and shared applications that are useful across departmental lines.

♦ **GIS Kiosk:** A public GIS Kiosk has been installed in the lobby of the Rood building which provides a GIS mapping application and associated County data for the public's use. This application provides parcel information, including owner name and printing capability.

♦ **Parcels:** The creation of a continuous enterprise GIS polygon based parcel layer that was electronically submitted to the State Board of Equalization and used in the redistricting effort in 2000.

♦ **GIS Data Sharing Agreements:** The adoption of a GIS Data Sharing Agreement with the City of Grass Valley, Nevada Irrigation District and the Nevada Fire JPA. The GIS Agreement provides a cooperative arrangement for the coordination and sharing of GIS data between these organizations. Numerous County departments and other regional organizations have started implementing GIS.

These external GIS implementations highlight the importance of having an "enterprise" or enterprise strategy for the effective development, maintenance, coordination and deployment of GIS data and applications.

♦ **GPS:** The GIS division has purchased a Global Positioning System (GPS) unit through a State Office of Traffic Safety Grant. Other departments will have access to this unit. Departments such as the Assessor, Code Compliance and Environmental Health will be utilizing GIS and GPS technology to augment their fieldwork. This will allow accurate mapping of facilities, hazard spills, hazard areas, buildings, and other information that needs to be gathered in the field.

♦ **Roads:** The County has completed the collection of the GPS (Global Positioning System) location of road centerlines as part of a pavement management effort and parcel map rectification. The completion of this effort has resulted in the best available GIS road "line-work" for County and State maintained roads along with major private roads.

♦ **Acquisition of USGS Orthoimagery and other color digital Photography:** In partnership with Federal agencies such as the United States Forest Service, the United States Geological Survey (USGS) and the NH2020 project, the County has acquired aerial photography for all of the County. We are in the process of updating the County's GIS black and white aerial photo library with color, 1.5 meter resolution Digital Ortho Quads (DOQ's).

♦ **Acquisition of USGS Digital Raster Graphics:** The USGS Digital Raster Graphics (DRGs) are scanned and registered topographic maps. Most County of Nevada staff are very familiar with USGS topographic maps. In fact, many departments currently rely on these paper maps during their normal course of business. Providing the DRGs to new GIS users delivers a familiar reference layer in the GIS and eases the transition from paper systems to automated systems.

♦ **Use GIS to Support Census 2000 Redistricting:** The County of Nevada used desktop and professional GIS software to support the redistricting effort. **Nevada County was the first County in the State that completed their redistricting.**

♦ **Build Version 1.0 "County Road Atlas" :** An up-to-date County road atlas (in paper format) has been created to replace the Compass map book. A Web-based digital road atlas would serve many critical county uses.

♦ **Professional GIS Capabilities for GIS Unit :** The BOS approved moving the GIS Division to IS. Two GIS Analysts and a GIS Technician have been hired and all staff have been in the Division for over a year. This allows greater opportunity for GIS integration with other departmental systems.

B. Enterprise GIS Vision

Scales of GIS Implementation

GIS is an information technology that can be implemented within an organization at different scales. A GIS can start simply and grow with the needs of an organization.   GIS implementation is typically categorized into four scales that are described below:

Figure 1. Scales of GIS Implementation
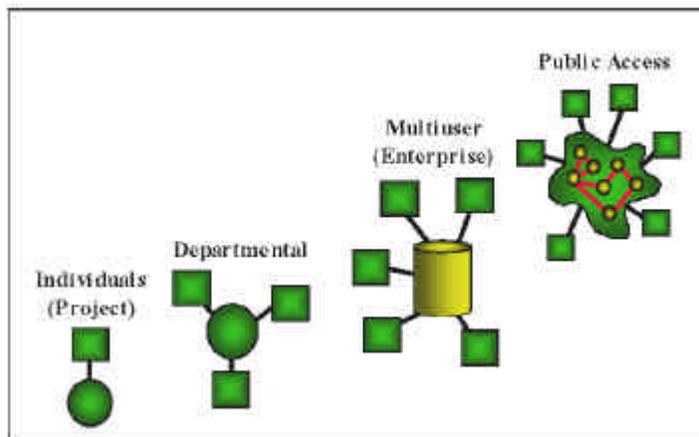
Project GIS (Individuals)—Desktop GIS software on a stand-alone personal computer used for project-level mapping and analysis.

Departmental GIS —Multiple staff within a department using desktop GIS software for mapping and analysis on personal computers that are connected via a local area network.

Enterprise GIS (Multi-user) —Multiple departments across the organization collaborating to centrally store and distribute shared spatial datasets and applications.

Public Access GIS - The organization sharing appropriate spatial datasets and applications with other key organizations and the public using Internet-based technologies.

Nevada County took the route of starting with a small and simple GIS and growing it with the needs of the organization during the past 10 years.   The County of Nevada's current scale of GIS implementation is at the Public Access level; most departments do not yet have a dedicated GIS staff person who is responsible for the data development and maintenance, i.e. a data liaison. Numerous departments have desktop GIS or CAD systems in place on a limited number of personal computers supporting project-specific needs.

Enterprise GIS

An enterprise GIS implementation is really a collaboration of project, departmental, enterprise, and public access GIS implementations. Key spatial data layers such as parcels, roads, streams, public land survey, photos and so forth are created and maintained by GIS Division staff. These key spatial layers are then stored in a central repository for efficient distribution across the enterprise and to data partners and the public.

An example of the power of an integrated enterprise GIS is the ability to use it to obtain a comprehensive understanding of a particular location. Each County department typically maintains information tied to parcel number or street address. The GIS provides the key link to consolidating departmental datasets into a single view. This would allow an emergency response officer to be able to see contact information for the parcel owner from the Assessor, the presence of hazardous materials from Environmental Health, a premises alert from the Sheriff's Office, planned road closures from DOTS, and, numerous other pieces of key cross-organizational information that could improve the emergency response action.

An enterprise GIS extends beyond the enterprise to reflect the fact that counties must interact with a tremendous number of outside organizations during the course of delivering services. Many of these organizations actively use GIS and would be willing GIS data partners; others would realize workflow benefits in having easy access to the central enterprise GIS and place fewer demands on limited County resources. The County of Nevada has already taken action to formalize its relationship with key GIS data partnerships by entering into a data sharing agreement with the Nevada Irrigation District, the City of Grass Valley and the Nevada County Fire JPA.   Expanding the data sharing agreements in the future to include additional second tier data partners would further reduce the county costs of building additional spatial datasets and increase overall collaboration that could result in broad regional benefits.

It has been impossible for Nevada County to have the necessary funding, staff, data, applications etc. ready at a single point in time to do a "complete" GIS implementation. In fact, like most information technologies, even after the initial GIS implementation, technological advances and changing organizational requirements required that the Geographic Information System further evolve over time to meet these changing opportunities and needs.

GIS Implementation Components

There are six principal components that were considered in the GIS implementation in Nevada County:

1. **Applications**—The way in which GIS is integrated within the day-to-day workflow of an organization. It is through these applications that the benefits of GIS are realized. The ability to use data developed in other systems creates a powerful and useful GIS.

2. **People**—GIS technology is of limited value without the people who use the system and apply it to real-world problems. The GIS Division currently has two GIS Analysts and a GIS Technician. Departmental GIS users range from technically knowledgeable users to those who use it to perform simple inquiries for their everyday work.

3. **Management**—A successful GIS operates according to an established set of policies and business rules that are unique to a given organization. It is also necessary to specify how these policies will be developed and modified through time. The GIS Analyst II currently serves as the lead GIS staff member.

4. **GIS Software**—Provides the functions and tools needed to store, analyze, and display geographic information. Nevada County uses ESRI's suite of software including ArcInfo, ArcView and ArcIMS.

5. **Data**—Possibly the most important component of a GIS. Geographic data and related tabular data has been collected, entered or updated in-house, shared with other agencies, or purchased from commercial data providers, and developed with contractors. The GIS currently has over 75 layers of geographic data that takes approximately 20 GB of data on our Win 2K server. The most current list of GIS layers can be found on the County GIS website at: http://www.mynevadacounty.com/gis

6. **Hardware/Network**—The computers on which a GIS operates. GIS software in Nevada County runs on two Windows 2000 servers accessed by numerous desktop computers used in stand-alone or networked configurations.

Overview of Strategy

The primary objectives of this report and overview of the enterprise plan for the next three years are:

- Develop and enhance the Enterprise GIS Vision
- Integrate GIS technology with E-Government Initiatives
- Establish County-wide standards
- Formalize the GIS Business Solutions Team (BST)
- Further eliminate duplicity in data development within County departments
- Formalize and strengthen partnerships with external agencies
- Launch a comprehensive marketing and training program
- Plan for future enterprise data and application development

C. GIS Data Coordination

GIS Framework Data Coordination Conceptual Approach
The basic concept for coordinating data creation, maintenance, and use among the various organizations in a multi-participant GIS has been developed by the Federal Geographic Data Committee (FGDC) and is known as the National Spatial Data Infrastructure (NSDI). At the heart of NSDI are standards for documenting and sharing key spatial data layers referred to as "Framework Data." Framework data is created and maintained at the highest-possible level of accuracy and is made available along with documentation about the data (also known as metadata) through a network of clearinghouses located throughout the country. Framework data in Nevada County include:

> Geodetic control
> Cadastral (public land survey and land parcels)
> Governmental units (census/demographics and jurisdictions)
> Orthophotography
> Transportation
> Hydrography

Although, the FGDC has provided substantial standards for data sharing and metadata publication, the issue of creating and maintaining framework datasets has been left up to the local agencies to coordinate. Nevada County has assumed a leadership role in providing the coordination that is needed to develop and maintain framework data layers through local and regional partnerships.   The County will use the coming year to further document datasets and develop standards and procedures for data sharing.

GIS Data Partnerships
Common spatial datasets such as parcels, roads, streams, etc. are of value to not only county departments, but also to external agencies and organizations. Initiatives to cooperatively develop and share a common regional spatial dataset eliminate costly redundancy and facilitate communication between organizations. The County of Nevada has already officially recognized the importance of data partners by entering into a data sharing agreement with the City of Grass Valley, Nevada County Fire JPA, and the Nevada Irrigation District.   The GIS data agreement provides a cooperative arrangement for the coordination and sharing of GIS data. It is anticipated that the GIS agreement will be expanded over time to include additional formal data partners.

In addition to the primary data partners, there are numerous other organizations such as federal and state agencies, utilities, private timber companies and conservation groups that maintain robust spatial datasets within the county. A number of these second tier potential data partners were active participants in the enterprise GIS implementation planning process including the U.S. Forest Service and the California Department of Forestry and Fire Protection and Nevada Irrigation District.

The County and its formal data partners would benefit from developing data sharing arrangements with these and other potential second tier partners. While the County has successfully developed an enterprise parcel and roads layer, there are still numerous other framework and other important spatial data sets that need to be developed. Instead of building duplicate data sets, the County can further collaborate with other organizations to jointly develop data sets and divert resources into GIS analysis and application development.

GIS Data Accuracy
Spatial or positional data accuracy is the degree to which information on a map or in a digital database matches true or accepted locations. Determining an appropriate level of accuracy for GIS data sets is a complex undertaking. It is recognized that the spatial accuracy of various data sets that will be used in

the enterprise GIS will vary according to original source information and available time frames and budgets for development and maintenance of the data. Accuracy varies both within and across spatial data sets due to the large enterprise extent that they cover.

One approach to choosing a spatial data accuracy level involves evaluating the potential applications and decisions that will ultimately be supported by the data, and selecting the *highest* level of accuracy (typically 1- to 2-foot accuracy for local government applications). Although it is certainly desirable to have a GIS database with the highest possible accuracy, because of the large physical extent of Nevada County, it was cost prohibitive to develop data sets at such a high level of accuracy. The cost to create a base map with 1- to 2-foot spatial accuracy for the County of Nevada could easily exceed $1 million. An alternative approach, and the one that has been implemented for the County of Nevada, is to determine the *minimum* level of spatial accuracy to support a set of applications that provide immediate benefits. As benefits from the use of GIS are derived, additional investments for improving data quality can be made over time. This approach also provides for modest initial investments in spatial data while leveraging existing data sources.

Accuracy will typically vary within the same dataset as it is improved over time. For example, as new subdivisions are developed, improvements in surveying technologies result in more accurate representations of the parcel layer for the recently divided lots.

Managing a spatial data set with differing levels of accuracy can be challenging, but it highlights the importance of good documentation or metadata. Keeping metadata on how the spatial data set was created and updated over time is essential to understanding the limitations and proper uses of the data. The task for the coming year is to complete metadata for all layers in the system.

To track accuracy levels within a spatial data set, features such as road segments or property lines can be attributed with an accuracy code. Accuracy codes that might be used are as follows:

Accuracy Level	Accuracy Code	Accuracy Description
1	CM	Centimeter Accuracy
2	SM	Sub-Meter Accuracy
3	12K	Derived from 1:12,000 scale
4	24K	Derived from 1:24,000 scale
5	100K	Derived from 1:100,000 scale

The use of accuracy codes within a spatial data set will provide users with a clear understanding of the accuracy of the features within the specific location they are viewing. It is important to point out that data produced by others may not be adequate for County purposes. For example, many state and federal GIS datasets are at a macro scale that may be useful for a regional perspective but may not be suitable for site-specific analysis. Site-specific analysis will probably require additional data collection efforts to improve the data within the study area.

GIS Data Standards and Metadata
An important role for the GIS Technical Business Solutions Team (BST) is to establish data standards. The following are preliminary recommendations for key data standards:

Coordinate System—A standard coordinate system is essential for the efficient use and distribution of

spatial data across county departments and agencies. The County of Nevada uses the State Plane Coordinate System (CA Zone II), North American Datum of 1983 coordinate system.

GIS Metadata—GIS metadata is information about the GIS dataset. Each GIS dataset to be available in the enterprise Spatial Data Warehouse should be fully documented. The County should adopt a GIS metadata standard. At a minimum, each data layer should have the following information:

> Dataset name
> Brief description
> Dataset accuracy
> Source information
> Geographic feature type
> Data dictionary of codes used
> Date of last update
> Contact information
> Known limitations/disclaimer

It is also recommended that this metadata be maintained on-line in a standardized format. The metadata catalog allows users to browse the catalog and determine the applicability of a particular data set for meeting a particular mapping or spatial analysis need.

Tabular Data Key Fields—The link between spatial and tabular datasets is important for GIS application development. The format of the assessor's parcel number (APN) and street address (situs) are typically the most important fields to standardize. The APN field format follows the same format as the Assessor's property information system in TAZ, the main Unix server in the County. The situs is maintained by the GIS Division and is formatted to facilitate GIS address matching or geocoding. The GIS department currently maintains the situs address for all parcels, and generates new addresses within the unincorporated areas of the County.

Digital Submission Standards—To facilitate data exchange and incorporation of cooperator data into the GIS Data Warehouse, digital standards and procedures need to be established. Digital submission standards will reduce the cost of assembling data into a common enterprise data structure that will help keep published datasets current. This is an effort that will require coordination with the Assessor, Recorder and Building department within the County. The potential to provide map data faster and less expensively will assist all land development departments.
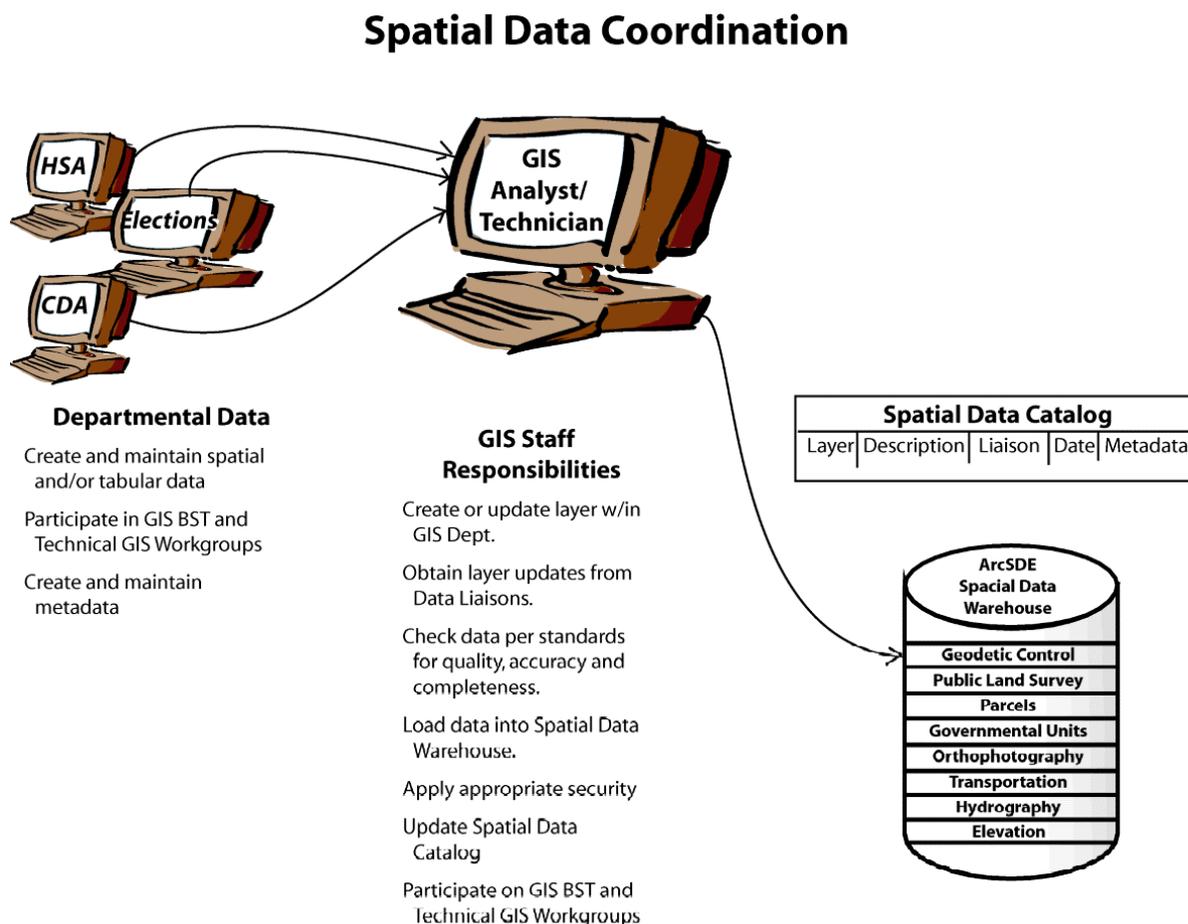
GIS Data Maintenance
In a multi-participant GIS, it is important to establish formal responsibilities for the creation and maintenance of GIS datasets that will be broadly distributed and used.   To avoid redundant efforts, a Data Liaison should be identified for each dataset that is locally maintained. For example, the Data Liaison for the parcel layer would be the mapping expert(s) in the Assessor's office.

Initially, the responsibility for data creation and maintenance for many of the layers has rested with the GIS staff but as GIS expertise and capabilities increase, more of the data responsibilities which include creating and maintaining metadata will be with the department liaisons most familiar with the datasets.

Figure 2 shows the flow of GIS information between the department GIS Data Liaisons and the GIS Analyst. At regular intervals, the GIS Data Liaison sends the GIS data and metadata to the GIS Analyst. The GIS Analyst checks the data and loads the data into the centralized Spatial Data Warehouse for further distribution. The GIS Coordinator also updates the central Spatial Data Catalog.

Figure 2   Spatial Data Coordination

Spatial Data Coordination

Departmental Data

Create and maintain spatial and/or tabular data

Participate in GIS BST and Technical GIS Workgroups

Create and maintain metadata

GIS Staff Responsibilities

Create or update layer w/in GIS Dept.

Obtain layer updates from Data Liaisons.

Check data per standards for quality, accuracy and completeness.

Load data into Spatial Data Warehouse.

Apply appropriate security

Update Spatial Data Catalog

Participate on GIS BST and Technical GIS Workgroups

Spatial Data Catalog

Layer	Description	Liaison	Date	Metadata

ArcSDE Spacial Data Warehouse

| Geodetic Control |
| Public Land Survey |
| Parcels |
| Governmental Units |
| Orthophotography |
| Transportation |
| Hydrography |
| Elevation |

The three main components of GIS Data Coordination are reviewed as follows:

Departmental Data Liaison (Decentralized)—Data Liaisons are the departmental experts with GIS capabilities and create and maintain GIS data that relate to their department and activities. Expertise using ArcInfo 8 software will be required. Initial departments most likely to take on the Data Liaison role would be the Assessor, DOTS and Planning.

GIS Analysts/Technicians (Centralized)—The GIS Analysts, Technicians and the Applications Manager are the catalysts for the enterprise GIS. The senior GIS Analyst will maintain the master list of enterprise GIS layers and data liaison responsibilities. The GIS Analyst checks spatial data from departmental Liaisons per the standards set. The GIS Analyst loads the spatial datasets into the Spatial Data Warehouse and maintains and publishes a Spatial Data Catalog and metadata. The GIS Analyst and Applications Manager works closely with outside data partner organizations.

Spatial Data Warehouse (Centralized)—The central GIS Data Server uses ArcSDE (Spatial Database Engine) to store the enterprise GIS layers in Microsoft SQL Server. The warehouse serves "raw" GIS layers to web-based applications as well as to professional and desktop GIS users.

D. GIS Data Distribution

An enterprise GIS requires a central library to store the shared GIS datasets as well as a mechanism for distributing this data to a large and diverse audience of users. This function requires large-scale information systems technologies that are implemented within the Information Systems Department. Figure 3 illustrates the near term plan for the creation, storage, distribution and use of GIS data throughout the county.

Figure 3. Spatial Data Distribution

## Spatial Data Distribution Figure
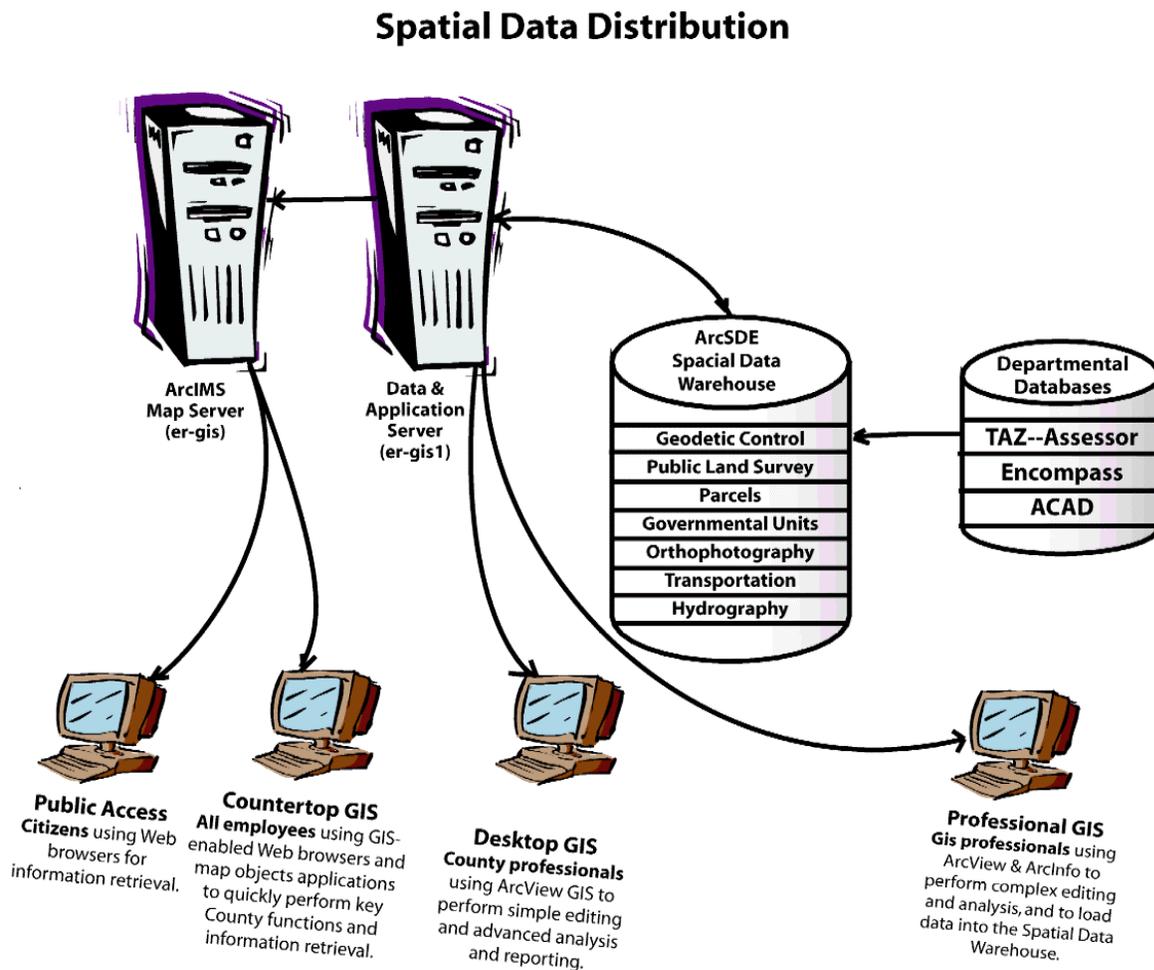
A Data Liaison using professional level GIS software maintains GIS data and metadata for a specific layer or layers related to their department. The Data Liaison provides a regular update of the GIS data and metadata to the GIS Analyst. The GIS Analyst checks the GIS data and metadata and loads the information into the centralized Spatial Data Warehouse. The Spatial Data Warehouse is composed of a GIS Data Server, a Relational Database Management System (RDBMS) and the gateway , ESRI ArcSDE, to efficiently store the spatial data in the tabular RDBMS. The GIS Analyst may require the assistance of a Database Administrator (DBA) to maintain the GIS servers and the SQL server software.

Once in the Spatial Data Warehouse, users of professional and desktop GIS software clients can directly access the GIS data. The GIS data in the Spatial Data Warehouse is in a "raw" form without symbolization, labels, color, or classification. Users of professional and desktop GIS software clients must be proficient at incorporating this "raw" GIS data into their projects.

The primary mechanism for distributing GIS data to casual countertop and public access users is through the use of Web-based technologies. A Web-based GIS application has been developed using in-house staff, to provide quick access and viewing of spatial data. A user makes a simple request from a Web browser to the Web Server. Given the popularity of Web browsers, the Web-based GIS applications has shown the potential of reaching broad audiences on the County's Intranet as well as across the Internet. A key advantage of Web-based GIS applications is that the user will be able to use geographic information without possessing GIS expertise or specialized GIS software. It is also much easier to manage and implement as opposed to desktop applications running a network or server based application.

Figure 4. Screen view of iGIS application implemented in Nevada County
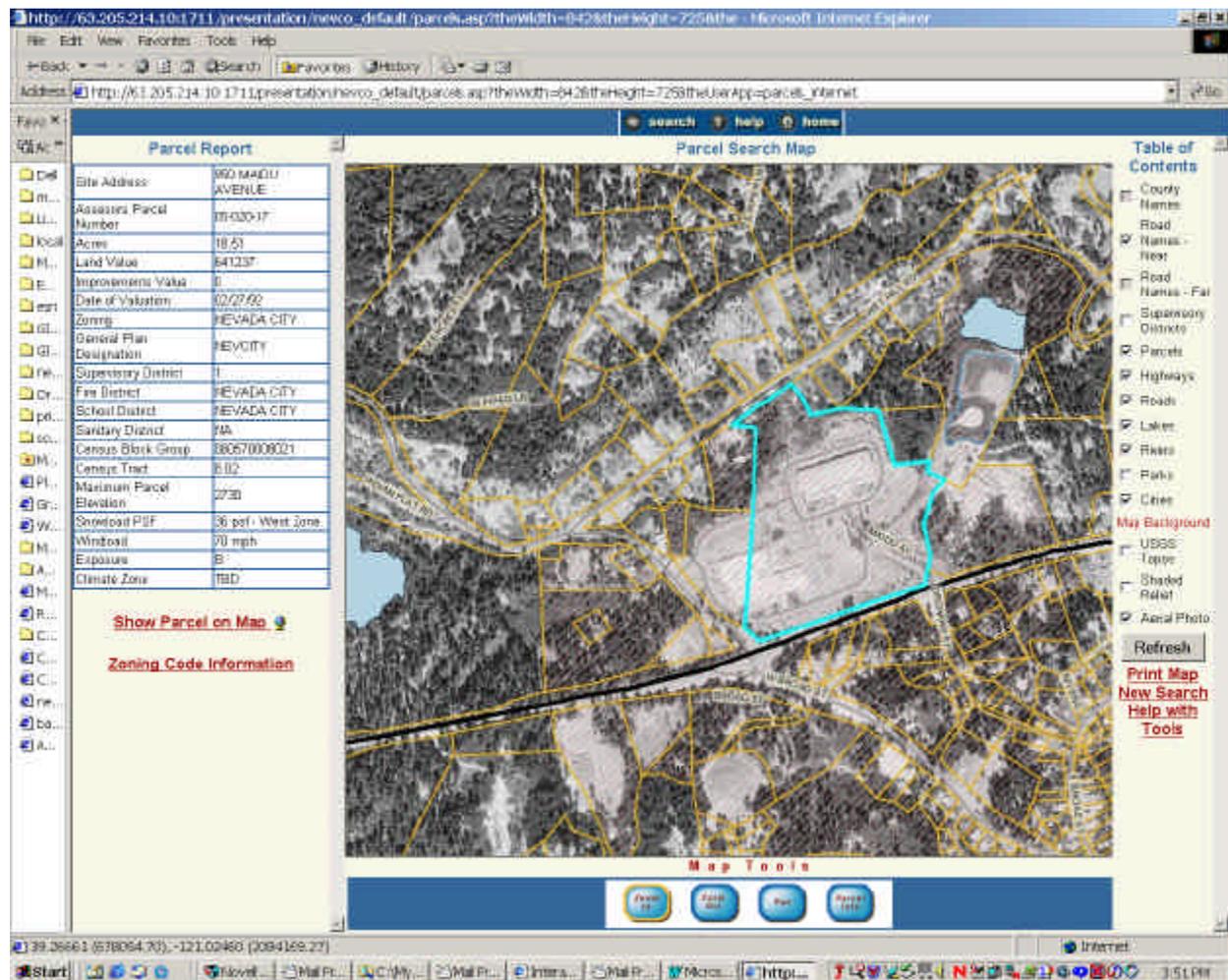
E. GIS Governance and Coordination

Enterprise Organization

The development, maintenance and use of GIS in the County of Nevada should be guided by the policy and business needs of the County. County departments and agencies, as well as other organizations (public, private, and non-profit) that operate in the County, have a common interest in coordinating efforts to meet their diverse agency needs. Other sections of this document discuss the benefits of coordinating GIS development and maintenance across various County departments.

Over the past year, the County of Nevada has introduced some key organizational changes that will be important to the successful integration of GIS into County workflow. The Board of Supervisors approved moving the GIS Division under the Information Systems Department under the direction of the Chief Information Officer (CIO). The GIS Unit has been staffed with two GIS Analysts and a GIS Technician. These organizational changes are consistent with the overall direction of this GIS Implementation Strategy. Figure 5 below shows the organizational structure for GIS activities already in place within the County.

Figure 6. County of Nevada GIS Organizational Structure and BST members
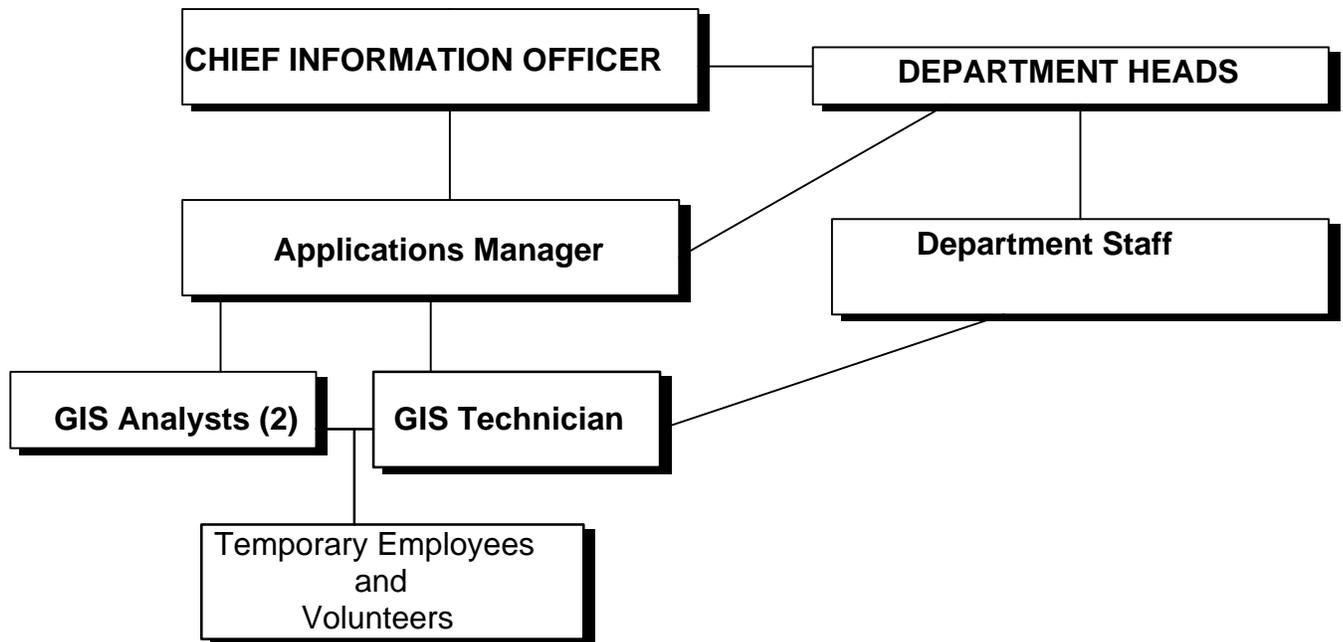
The success of the enterprise GIS implementation will be largely determined by the active participation by representatives from all of the County departments and external organizations that have been participating to date. The large number of County departments and external organizations involved in the enterprise GIS implementation will require effective top-level governance. The County of Nevada is fortunate to have already established an initial GIS governance structure.

Enterprise GIS Governance and Coordination
The GIS Business Solutions Team (BST) is composed of GIS Coordinators, GIS technical users, Departmental representatives from within the County as well as from the participating organizations. The GIS BST will develop common standards for spatial data and metadata along with procedures for updating, storing and distributing the geographic information, technical forums to develop standards and address technical issues, while providing coordination and direction for the development of the GIS. The role of this BST is also to address the common uses of GIS and shared geographic information. Specifically, the GIS BST should identify, prioritize, coordinate and seek funding sources to achieve solutions that are common among organizations   In turn, representatives of the GIS BST from the various member organizations need to be responsible to their organizations to manage and implement data and applications that will meet their policy and business needs.

Figure 6. Overview of Workflow between GIS BSTs and County Technology Partnership Model

The Nevada County Technology Partnership Model
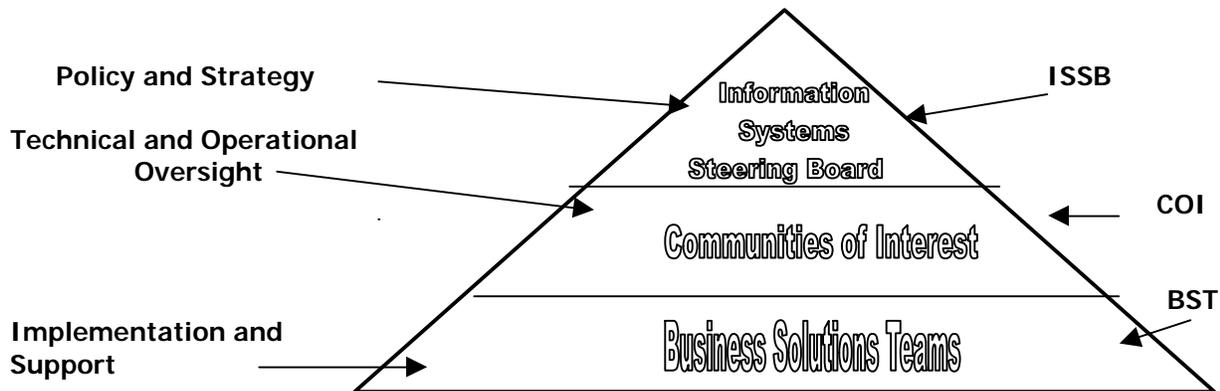
F. Phased Implementation Plan

Nevada County has used an incremental or phased approach to implementing GIS. This paced approach provides for a gradual acceptance and understanding of how the technology can be used most effectively. This approach has also allowed for a phased investment process. This type of approach provides for incremental improvements and avoids unrealistic expectations and demands that often accompany large procurements. The table below outlines future implementation plans of the Enterprise GIS in Nevada County.

Phase II (2003- 2004)	Phase III (2004- 2006)
1. Complete GIS Implementation Planning Process	1. Implement Direct Edits/Versioning in GIS Data Warehouse
2. Continue to Formalize GIS Business (BST)	2. Integration of GIS w/ Departmental Databases
3. Explore New Data Partnerships	3. Publish Spatial Data on "Geography Network" or In-House Developed Equivalent
4. Finalize Standards	4. Digital Submission Standards
5. Review/Modify GIS Implementation Plan	5. Advanced GIS Spatial Analysis & Modeling
6. Refine Spatial Data Library	6. Wireless Access to GIS for Mobile Staff
7. Begin Spatial Data Catalog and Metadata	7. Web-based Applications w/ GIS Components to Support 24-Hour Virtual Front Counter
8. Deploy GIS Data Warehouse Technology	8. Real-Time Emergency Response Dispatch System w/ GIS Components
9. Improve Control	
10. Update & Improve Parcels	
11. Acquire New Enterprise Orthoimagery through Cooperative Buying Pool	
12. Develop Preliminary Geo Database Schema	
13. Resolve Problems with Addressing Data	
14. Attribute Roads with Address Ranges	
15. Create Subscription Web-based Property Information Applications for Public Internet Users	
16. Create simple Web-based Applications for Various Departments	
17. Deploy Professional GIS Capabilities for "Data Producer" Departments	
18. Conduct Ongoing GIS Awareness Workshops	

Many of the activities and applications in later phases are dependent upon the successful completion of activities in earlier phases. For example, in order to deploy the "Real-time Emergency Response Dispatch System" the "Attribute Roads with Address Ranges" in Phase II will need to be completed.

Phase I – Enterprise GIS Infrastructure Completed (Years 2000 - 2002)

The primary focus of this phase was to create the foundation for the enterprise GIS. This included both the pre-requisite technology systems and the people systems. Departments have been using GIS for simple mapping and viewing of available spatial data for several years. Key GIS datasets and systems to support the effective use of GIS within County departments have been completed during this phase. A centralized GIS Data Warehouse and GIS Map Server provides a robust means of distributing spatial data across the County network and also to the public via the Internet. Departments have enough GIS tools, expertise and spatial datasets available to noticeably improve work processes. Phase I is now complete.

Phase II - Planning (Year 2003)

1. **Complete GIS Implementation Planning Process:** The current Enterprise GIS Implementation Plan should be completed and widely distributed among the relevant county entities and collaborators. As the implementation progresses, it is expected that a number of new participants will join the effort.

2. **Continue to Formalize GIS Business (BST):** The GIS Policy BST should begin meeting on a regular basis to develop initial spatial data standards and begin identifying "Data Liaisons". Initially, the GIS BST should meet on a quarterly basis to stay abreast of the implementation activities. As time progresses it may be more practical to address highly technical matters by the smaller, more focused GIS Technical work group. Issues that may be addressed by the Technical work group include:

   Data Standards
   Geodetic Control
   Cadastral Mapping
   Transportation Layer Integration
   Governmental Units
   Setting Spatial and Metadata Standards

3. **Explore New Data Partnerships:** The County of Nevada already has some valuable formal and informal data partners. The direct benefit of establishing data partnerships is that it reduces and spreads the cost of GIS. Data partnerships help to develop collaboration with organizations that the County does business with resulting in more effective delivery of services to County citizens.

4. **Finalize Standards:** The GIS BST should finalize spatial and metadata standards. The standards should be widely distributed with a primary focus on those departments that have data liaison responsibilities. The GIS Analyst needs to ensure that spatial data stored on the GIS Data Server (GIS library) adheres to these standards.

5. **Review/Modify GIS Implementation Plan:** Planning is an ongoing process, and the GIS staff, GIS BST and GIS Technical workgroups should review and modify their plans as necessary

6. **Preliminary GeoDatabase Schema:** The GIS data model is undergoing a dramatic transformation from "primitive" or "simple" features (points, lines, polygons) to an object-oriented model referred to as a geodatabase. The County of Nevada should stay abreast of industry consortiums that are working to standardize geodatabases for framework layers such as parcels, roads and streams, etc. The County should begin to implement the geodatabase schema (design) for future County use.

GIS Library

7. **Refine the Spatial Data Library:** One of the most valuable elements in an enterprise GIS is providing participant access to a central "GIS Library". GIS Analysts should begin to develop and document a logical directory structure and make the current GIS data sets more readily available.

8. **Begin Spatial Data Catalog and Metadata Documentation:** In order to find items in the "GIS Library", a simple catalog should be created which lists the spatial dataset name, description, location on the Data Server, version and a reference to the metadata (additional documentation) for the layer.

9. **Deploy GIS Data Warehouse Technology:** The Nevada County Information Systems Department currently has a centralized computer server to store GIS data. Currently, this GIS Data Server is able to serve file-based spatial datasets on the County Local Area Network (LAN). The GIS Division, with assistance from IS, should more fully utilize the Relational Database Management System (RDBMS) comprised of MS SQL and ArcSDE on the GIS Data Server. These hardware and software technologies are collectively referred to as a GIS Data Warehouse. Developing and implementing a strong security scheme will allow departments to confidently store sensitive data in this centralized location.

Data

10. **Improve Control:** County efforts with the Bureau of Land Management (BLM) Geographic Coordinate Database and local surveyors will facilitate regular improvements to the Public Land Survey System layer. Other GIS layers that are dependent on this layer can then be improved.

11. **Update & Improve Parcels:** The County has completed a county-wide, seamless polygon based layer for parcels with each parcel attributed with its associated Assessors database data. Future key GIS applications will depend on a robust and well-maintained enterprise parcel layer. The County of Nevada should develop the in-house capabilities and procedures necessary to maintain and improve the parcel layer. This would involve developing procedures and applications for automatically loading the CAD created parcels from the Assessor's office directly into the Enterprise GIS. It is essential to devote appropriate resources to maintain and improve parcels on a regular basis. As the underlying control improves (Public Land Survey System), the County will also be able to improve the spatial accuracy of the parcel layer.

12. **Acquire New Enterprise Orthoimagery through Cooperative Buying Pool:** The County's formal and informal data partners should enter into a cooperative cost sharing arrangement to acquire updated orthoimagery for the entire county. With new satellite technologies providing cost effective imagery, the buying pool should consider a plan to update the imagery on an annual basis. Higher resolution aerial imagery may be required for more developed areas of the County.

13. **Resolve Problems with Addressing Data:** Address data is integral to the operations of many County departments and applications. Therefore it is critical for the County to have a consistent, accurate system of assigning and maintaining address information within all County databases. Having consistent, accurate addressing allows for the mapping of this information using a GIS capability referred to as geocoding. In geocoding (also referred to as address matching), an electronic point can be automatically placed on the GIS map based on the house number, street and community name. An example of the importance of consistent and accurate data would be an application that would route emergency response vehicles to an incident based on an address. The County is developing and will maintain a single addressing database that contains official road names, valid addresses and community/city names that all departments and agencies can share.

14. **Attribute Roads with Address Ranges:** The initial GPS capture of roads provides quality framework layer line work but the road segments do not include address ranges. In order to use the

GIS for future emergency-response routing applications, the road segments are being attributed with address ranges. This effort is time-consuming and more resources need to be allocated for this task in the coming year.

Applications

15. **Subscription Web-based Property Information Applications for Public Internet Users:** The GIS Division and the Assessor's Office should jointly develop and deploy a suite of Web-based property information applications for public Internet users. Issues of security and data confidentiality will need to be addressed. These applications would not only target members of the public but could be served using a subscription service to businesses such as real estate and title companies. These applications would increase the revenue base to fund the development of the software or upgrade of hardware needed.

16. **Simple Web-based Applications for Various Departments:**

   ➢ Polling place locator application for public internet users for Elections
   ➢ Tax auction application linked to the parcel database for the Tax Collector
   ➢ County maintained roads information for DOTS
   ➢ Crime locator for the Sheriff
   ➢ An interface with CRM
   ➢ Well and Hazardous materials locator for Environmental Health
   ➢ Environmental constraints for Planning

Staff

17. **Professional GIS Capabilities for "Data Producer" Departments:** In addition to the GIS Division in the Information Systems Department, County departments with data liaison responsibilities over key framework layers, such as parcels, will also need to develop and support professional GIS capabilities. The Assessor's Office and the Planning Department will need additional hardware, software and training to become proficient at the professional GIS level. These departments will create and maintain some key county spatial datasets to be used by all departments and data partners.

18. **Conduct Ongoing GIS Awareness Workshops:** GIS is not a new technology to the County of Nevada, and different departments will have different rates of adoption. The GIS BST should conduct periodic workshops to demonstrate the uses and benefits of GIS to broader audiences, both internal and external to the County structure.

Phase III – Applications and Analysis (Years 2004 - 2006)

1. **Implement Versioning /Direct Edits in GIS Data Warehouse:** The Information Systems Department should implement advanced features of the GIS Data Warehouse such as versioning and direct editing. GIS Data Warehouse technology is transaction-based and can be configured to allow versioning. Versioning would allow users to rollback the spatial dataset to an earlier point in time which would be useful for land records management datasets such as parcels. Another advanced feature is the direct editing of spatial data. "Data Producer" departments should have the ability to directly edit the datasets for which they are responsible eliminating the GIS Division, in the middle.

2. **Integration of GIS w/ Departmental Databases:** The majority of GIS applications will depend on the integration of spatial data sets with existing departmental tabular databases. The GIS Division needs to work with various county departments and third party vendors to understand the data structure and to develop efficient techniques for accessing these systems. The initial integration may require a process that requires manual updates. These other systems would include the Tax

Collector's system, CDA Encompass system, and the Assessors parcel system.

3. **Publish Spatial Data on "Geography Network" or In-House Developed Equivalent:** There will be increasing demands on the County for distributing spatial data. The County should evaluate the feasibility of publishing its spatial data in live GIS catalogs on the Internet. As a user of ESRI enterprise software such as ArcIMS, the County of Nevada will be well positioned to publish its data in one such live GIS catalog, the Geography Network. Publishing spatial data on the Internet will provide citizens easy access to key County and regional geographic datasets and applications eliminating the need for manual service.

4. **Digital Submission Standards:** To facilitate data exchange and incorporation of external data into the GIS Data Warehouse, digital standards and procedures need to be established. Digital submission standards will reduce the cost of assembling data into a common enterprise data structure that will help keep published datasets current. This is an effort that will require coordination with the Assessor, Recorder, and Building departments within the County. The potential to provide map data faster, and less expensively, will assist all land development departments handle these requests.

5. **Advanced GIS Spatial Analysis & Modeling:** Desktop and professional GIS software is capable of complex spatial analysis and modeling. As internal GIS knowledge and skills increase and high quality spatial data becomes available, the County of Nevada will be in a position to perform more high-end spatial analyses. This advanced analysis capability will probably be limited to the staff in the GIS Division.

6. **Wireless Access to GIS for Mobile Staff :** Virtually every County department has staff that spends a significant amount of time in the field collecting data or delivering services. Tremendous advances in mobile computing will allow the County to extend its GIS datasets and applications to employees in the field. This could include use of Personal Data Assistants (PDA's), wireless and other technologies.

7. **Web-based Applications w/ GIS Components to Support 24-Hour Virtual Front Counter:** The increasing popularity of the World Wide Web as a platform for doing business (e-commerce) can be extended to County services. The County has implemented an e-government initiative of conducting as much business as possible on the Web. The concept of a virtual front counter that citizens could visit 24 hours per day has tremendous benefits. GIS datasets and Web-based GIS functionality would be key components of the virtual front counter.

8. **Real-Time Emergency Response Dispatch System w/ GIS Components:** The County should work with local emergency response organizations to develop a dispatch system that routes and tracks emergency response vehicle. Geotechnologies such as GPS and GIS would be key components in this application. The ability to implement this emergency response application will depend on the County's ability to successfully resolve inaccuracies and inconsistencies in the County's addressing and road naming data sets. This will require working closely with the Sheriff's Abbey system.

G. Enterprise GIS Potential Participant Contacts

Organization Contacts-County Departments

Department of Transportation and Sanitation
Planning
Assessor
Sheriff
Elections
Building Inspections
Recreation
Environmental Health
Behavioral Health
County executive Office
Probation
Transit

Organization Contacts: Non-County Departments

City of Grass Valley
City of Nevada City
Town of Truckee
National Forest Service
California Department of Forestry
Sierra Economic Development District/Sierra Planning Organization
Nevada Irrigation District
Nevada Fire JPA
Nevada County Superintendent of Schools
Truckee/Tahoe Sanitary District
Truckee Tahoe PUD
Nevada County Land Trust
Placer County