North Dakota

Statewide Information Technology Plan

2000

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North Dakota Delivers

With Technology

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Background and Purpose

North Dakota Century Code (NDCC) 54.59 gives the Information Technology Department (ITD) responsibility for preparing the Statewide Information Technology Plan based on the plans submitted by state agencies. This is the second Statewide Information Technology Plan developed by ITD. It continues to build on the vision threads outlined in the first plan. This plan describes the vision for information technology for the state, identifies the information technology architecture required to achieve the vision, and establishes goals and strategies for accomplishing the vision.

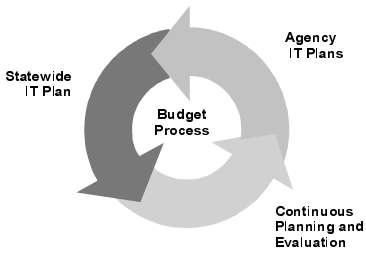
Because the planning process is a continuous one, the statewide technology plan provides a glimpse into the process *at this point in time*. The plan is simply that, a plan. The actual implementation, and even the strategies, may change depending on funding, technology changes, or changing requirements.

State Technology Plan Purpose

- ☐ Communicate a shared vision for information technology so that state government and its stakeholders can achieve common goals and objectives through coordinated efforts.
- ☐ Outline strategic initiatives identified by the Chief Information Officer to achieve the vision. These initiatives correspond to funding initiatives outlined in the executive budget recommendation.
- ☐ Provide decision-makers with criteria for evaluating technology projects and funding initiatives. Projects and technology initiatives which move North Dakota closer to the vision should receive top priority.
- ☐ Establish goals and strategies which will serve as a basis for more detailed planning efforts.

North Dakota Century Code (NDCC) 54-59 requires that each state agency submit a technology plan to ITD prior to January 15th of each even numbered year. Information from the individual agency plans, along with research and trend information, is used in the State Technology Plan.

State agency plans and projects are summarized in a companion document entitled North Dakota Statewide Information Technology 2000 Agency Plan Summaries. The summaries provide specific agency technology goals and objectives information, and outline the budget requirements for implementing the plans.



Senate Bill 2043, passed by the 1999 Legislature, outlined additional requirements for reporting budget information related to technology plans. ITD rewrote the guidelines for reporting technology plans and implemented an online system for collecting the planning information during 1999. The detail budget information for the agency technology plan is entered one time, directly into the budget system, providing a clear link between the agency technology plan and the budget request.

During the 2001 Legislative session, an evaluation of the planning process will be conducted to identify additional improvement areas.

Vision for Information Technology
in North Dakota

Customer Focused

Efficient

Well Managed

Leadership
for Developing a
Shared Infrastructure

The field of information systems has always changed rapidly. This is especially true today when methods and technologies are constantly being improved, altered, or discovered. The pace of technological change and the rising expectations of users means even the most effective information technology organizations must continue to learn, improve and plan toward the future.

Information is both a significant resource for, and a major product of, state government. The state's ability to collect information, process it in a useful way, and share it collaboratively with all levels of government is of significant importance in conducting the business of providing citizens with faster and more efficient service. This statewide plan embraces that purpose.

Although North Dakota agencies have diversified business functions, four common planning threads emerge when viewed from a wider-ranging perspective. These general components form the nucleus of the statewide vision for information technology. Critical to the planning processes of the more than 80 state agencies contributing to this plan is the recognition of this broader statewide strategic vision.

This vision also provides decision-makers with criteria for evaluating technology projects and funding initiatives. While the vision does not provide specific spending priorities, it does provide a basis for evaluating projects. Each properly designed and assessed individual project should then move the state closer to achieving its overall vision. This statewide plan now brings the agency plans together for that purpose.

Like all technology plans, this plan is built on business requirements. These four vision threads identify the business requirements for North Dakota state government and drive technology planning efforts.

These vision statements for information technology provide the common direction for coordinated efforts. State agencies use this vision as a basis for information technology planning. By working together, goals are achieved faster and more efficiently.

State government should be customer focused.

The creation of e-government portals on the Internet has forever transformed the way in which government customers access services.

Governments consist of agencies organized for narrow, stovepipe purposes. Users of government services, i.e. citizens, businesses, employees, and other governments, often have multiple needs and are required to seek out and visit multiple agencies, often at multiple locations, to satisfy their needs. The Internet has facilitated the formation of electronic governments, or e-governments, that act as virtual front desks for government. The creation of e-government portals on the Internet has forever transformed the way in which government customers access services.

Unfortunately, efforts so far have not been uniform. In December 1999, an executive memorandum was issued for the heads of federal departments and agencies. Directives included in the memorandum promote the identification and organization of government services in ways that make it easier for the public to electronically find the information it seeks.

Traditional government is based upon physical boundaries; the new electronic government, or e-gov, transcends boundaries.

The memorandum stated that, "While Government agencies have created 'one-stop-shopping' access to information on their agency web sites, these efforts have not uniformly been as helpful as they could be to the average citizen, who first has to know which agency provides the service he or she needs. There has not been sufficient effort to provide Government information by category of information and service — rather than by agency — in a way that meets people's needs."

Wayne Hanson, Consulting Editor for *e-gov* magazine supplement, June 2000, provides reasons for the non-uniformity. He says that, "The hard realities of re-engineering, of obtaining funding and recruiting and training sufficient staff to make it work, have not yet been confronted. Fundamental questions of taxation, revenue, jurisdiction, economic development and regulation have also not been resolved or, in some cases, even fully understood."

Technological innovation and the speed of information are allowing society to do new things, and old things in new ways. As this different kind of society emerges, a different kind of government is needed, a government that uses technology as a vehicle for focusing on fast and expanded customer service.

Traditional government is based upon physical boundaries; the new electronic government, or e-gov, transcends boundaries. Rules and regulations based upon borders quickly lose their meaning within the Internet. As geography loses its significance, new models of citizenship will surface.

To address the new models, strategic investments are needed. The National Governor's Association emphasizes that the new economy calls for strategic investments, both intellectual and physical. "Human capital investments should focus on lifelong learning, providing opportunities from early childhood through adulthood for

people to gain the requisite skills for the coming decades. Physical investments should focus on the institutions and facilities needed to acquire these skills and the infrastructure needed to support businesses and improve the quality of life."

E-government questions the fundamental organization and delivery of government, creating challenges much greater than the medium associated with the delivery. Because of the Internet, all of government must adapt. Web page development and email are only a small part of the electronic government revolution. The dynamics of government are changing as a result of the Internet.

The solutions to e-government rest with elected and top-level appointed government leaders. Information technology can facilitate the electronic delivery of services and information, but it cannot, and should not, control the re-engineering required. Political scientists and sociologists must steer e-governance.

To date, early e-government initiatives in many states, North Dakota among them, have targeted the dissemination of ordinary information and the automation of existing services. For example, the state of North Dakota's new web portal, DiscoverND.com, lists the following customer-oriented electronic government options: Contractor License Inquiry, E-Forms, Harvest Inventory Program, New Business Registration, Purchase Hunting and Fishing Licenses, and Purchase Birth/Death/Marriage Certificates.

The Online Dakota Information Network (ODIN) is another significant e-government initiative operated by the University of North Dakota. ODIN provides public access to library information and research materials of its more than 40 member libraries. ODIN is a virtual library without boundaries.

North Dakota University System needs to replace its current financial, student information and human resources/ payroll systems with an integrated system that will provide improved service to students, employees, policy makers and vendors. Online admission, registration and bill paying processes are becoming essential to attract and retain students. Demand and availability for distance education courses are also growing as students look at alternatives to full-time on-campus enrollment.

Because of the Internet, all of government must adapt.

Currently, electronic governance initiatives are speeding ahead. However, according to *Government Technology* magazine, June 2000, the Gartner Group, a technology research and consulting firm, states that more than half of e-government initiatives will fail in the next five years because the systems aren't up to citizen expectations. The report also says that governments have fallen behind consumers and businesses in the use of computers and the Internet.

Demand and availability for distance education courses are also growing as students look at alternatives to full-time on-campus enrollment.

Actions taken by government officials indicate that North Dakota is moving in the right direction at a speed on par with the bulk of the states. However, the big winners in e-commerce are moving at a much greater speed, sweeping the expectations of consumers, a.k.a. citizens, with them. As expectations toward commerce adjust, the way citizens relate to government will transform.

As expectations toward commerce adjust, the way citizens relate to government will transform.

In moving toward a digital state, the question of how to balance the legitimate expectations of individuals for privacy with the needs of government becomes important.

These indications imply that the state of North Dakota should:

- **Transcend stovepipes** - Adopt a philosophy of change management that transcends traditional functional stovepipes.

- **Resolve fundamental questions** - Work toward understanding and resolving fundamental questions of privacy, security, taxation, revenue, jurisdiction, economic development and regulation in relation to electronic governance.

- **Understand expectations** - Keep abreast of citizen expectations of government.

- **Track legislation** - Follow digital government legislative and gubernatorial mandates of other states for use as models, especially in such areas as privacy, security, and digital signatures.

- **Cross boundaries** - Re-engineer government, cutting across physical and organizational boundaries when required, to meet the changing expectations of citizens.

- **Elevate the "I" in IT** - Give the *information* part of information technology equal status when building the state's web portal. Include knowledge workers along side of technicians when creating a customer centric "front desk" to government. Re-organize functional work groups if necessary.

- **Deliver more e-government** - Aggressively continue to improve access to government by delivering more self-service models of government over the Internet.

- **Build intellectual and physical infrastructure** - Grow "e-society" by requiring information technology training in school curricula while nourishing rural telecommunications access at affordable rates.

- **Use IT properly** - Use information technologists to facilitate, not drive, e-government initiatives as leadership must come from the top, i.e. the state legislature and the governor, guided by the Chief Information Officer (CIO).

- **Expand distance learning offerings** - Promote the education "anywhere—anytime" concept and expand distance learning offerings.

- **Balance privacy issues** - Balance the public's need to know with the rights of individuals for privacy. Develop policy for state agencies based on best practices of notice, choice, access, and security.

The state of North Dakota web site will eventually become the "shopping mall" for state government information and services. Citizens will have opportunities to be informed and involved as never before.

In moving toward a digital state, the question of how to balance the legitimate expectations of individuals for privacy with the needs of government becomes important. Expanding the awareness of state agency managers and staff with regard to privacy and security issues becomes a challenge that must be met. Legislation at both state and national levels will need to be considered and followed closely to avoid the risk of gradual, long-term erosion of privacy.

State government should be efficient.

While state government continuously strives to improve its effectiveness and efficiency, funding for many programs is limited. Government must constantly streamline operations and improve the quality in the delivery of diverse programs. The success of such programs is made possible through the implementation of state-of-the-art information technology. The effective management of information technology can provide the return on investment needed to accomplish the goals and missions of the agencies within the resources available to state government.

Interactive Video Network

The North Dakota Interactive Video Network (IVN) is a popular example of government efficiency. The network supports video applications in point-to-point and multi-point conferences. The IVN network connects 21 classrooms at the 11 North Dakota University System campuses with interactive video rooms at the five North Dakota Tribal Colleges, the state Capitol, the State Hospital, and 23 K-12 classrooms in the Great Western network.

Enhancements in this plan will increase the access to higher education opportunities throughout the state by supporting multi-point Internet Protocol (IP) video in combination with other video systems. The enhancements will also provide support for expanded use of video, especially Internet Video, for state government applications, K-12 schools, libraries, and county and city government for education, training seminars and meetings. Schools will be able to share teachers for selected classes, and all public agencies will save time and expense previously required to travel to a single meeting location.

The success of such programs is made possible through the implementation of state-of-the-art information technology.

Geographic Information Systems

Another area for targeting efficiencies in technology is in Geographic Information Systems (GIS). Under leadership from the state's Chief Information Officer, the Convergent Group from Denver, Colorado, was selected to conduct an initial statewide GIS review.

The results indicated agency agreement that GIS is important to state government, that declining budgets make GIS a hard sell, that hiring and retaining GIS talent is difficult, that agencies would like to do more cost sharing, and that the GIS focus needs to be toward web-enabling GIS information. The review identified differences among the various agencies in data models, symbology, platforms, and accuracy.

According to the Convergent Group, GIS actions need to be focused by business case, and the business case must be tight and cannot be based solely on elimination of redundancy through cost sharing.

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Criminal Justice Information

A number of planning activities currently underway by the Judicial Branch and the Attorney General's Office have underscored the need for an integrated system for collecting and reporting criminal justice information. The focus will be to provide better customer service through timely access to information.

Integration will also provide for greater efficiency by eliminating duplication and streamlining existing practices.

The Information Technology Department, with the cooperation of the Judicial Branch and Bureau of Criminal Investigation, has applied for planning assistance to SEARCH, the National Consortium for Justice Information and Statistics, and for a planning grant from the National Governors' Association (NGA). The activities required for the NGA grant will be integrated with the assistance provided by SEARCH. The integration will identify specific, high-priority initiatives to enhance information sharing.

Electronic Document Management Systems

The idea of document management has been around for decades under such headings as the "paperless office" and "office automation."

The goal of document management has always been information sharing. The implementation of document management includes the capture and indexing of paper documents in a digital format. Once archived, they can be easily retrieved.

The technology is called Electronic Document Management Systems (EDMS). To make the technology available and affordable, the Information Technology Department intends to offer centralized EDMS services.

Enterprise Resource Planning

Conducting business online will require the state to rethink policy and legislation regarding financial transactions.

To tie major administrative applications to a common environment, the state of North Dakota intends to build an Enterprise Resource Planning (ERP) system. The state seeks an integrated suite of software products with proven functionality for state government, higher education, and public education.

The core applications include financial management, purchasing, budgeting, human resources, payroll, asset management, and student information. Development is anticipated to span three years beginning just prior to the 2001-2003 biennium.

An element of the ERP system is a data warehouse: a copy of transaction data structured for querying and reporting. To deal efficiently with warehoused data, the state will acquire a system that includes a comprehensive ad hoc reporting and inquiry tool that allows users to easily create custom reports. The tool will operate in a web-centric environment, allow data warehouse data to be directly imported into documents created in third party products, and will be user-friendly.

The state of North Dakota intends to build an Enterprise Resource Planning System (ERP).

The state also desires the data warehouse to provide analytical applications in the areas of financial management, performance management, purchasing management, and workforce management. The applications should be easy to learn and use, completely web-enabled, be tightly integrated with the data warehouse, and have a look and feel similar to other system applications.

Furthermore, as part of the ERP, the state requires a comprehensive purchasing system to automate the entire procurement process, thereby improving the efficiency and effectiveness of state procurement. This process includes processing the requisition, preparing specifications, identifying potential suppliers, establishing evaluation criteria, drafting and issuing a bid solicitation.

It also requires receiving bids, evaluating responses, awarding a contract or issuing a purchase order, administering the contract, checking status, receiving the goods or services, processing payment, managing inventory and capitalized assets, and ensuring quality control at every stage in this process.

A system that addresses the procurement management needs of various levels of government and vendors desiring to do business with the state is planned.

Meeting the challenge of providing improved service and increased efficiencies in government will require that agencies work together cooperatively, minimize duplication of efforts, increase their sharing of common information technology resource, and foster innovation in the application and deployment of information technology.

To meet the new efficiency challenges of digital government, the state of North Dakota should:

- **Expand videoconferencing** - Expand the North Dakota Interactive Video Network and embrace Internet videoconferencing as a method of increasing employee collaboration while decreasing travel and location expenses.

- **Sponsor a GIS hub** - Sponsor a statewide Geographical Information System (GIS) hub that would provide a means of sharing the GIS information now stored locally at each agency.

- **Integrate Criminal Justice Systems** - Fervently proceed with plans to integrate the system for collecting and reporting criminal justice information to provide better customer service.

- **Coordinate EDMS** - Coordinate statewide efforts in electronic document management systems to promote larger sharing opportunities and common expertise.

- **Pursue ERP** - Pursue an Enterprise Resource Planning solution that will integrate the core financial and administrative applications of state government, higher education, and public education.

- **Build data warehouse support** - Acquire data warehousing and decision support tools that are fully integrated with the ERP system and other vital state management information systems to facilitate strategic planning, tactical operations, and system-wide analysis.

- **Implement e-procurement and expand PCards** - Automate and web-enable the entire process of procurement while expanding the use of procurement cards.

The state also desires the data warehouse to provide analytical applications in the areas of financial management, performance management, purchasing management, and workforce management.

State government should be well managed.

Technological innovation and the speed of information are allowing society to do new things, and to do old things in new ways. As this different kind of society emerges, a different kind of government organization is needed, a government that uses technology as a vehicle for focusing on fast and expanded customer service. These changes call for innovations in leadership.

The Internet allows employees to participate remotely in leadership processes. And, there will be more employees available to do just that, because e-government allows for the automatic processing of routine business transactions around the clock. This frees human resources to exercise judgement and to participate to a greater degree in decision-making processes.

Knowledge workers must be encouraged to pursue opportunities in evolving leadership models.

In the digital world where the potential for collaborative work is so great, leadership among a few is no longer relevant. With this in mind, knowledge workers at all levels must be encouraged to participate in decision-making processes. The ERP and GIS systems will provide decision support information at a variety of levels.

A critical element in managing technology is the training and retention of a highly skilled workforce capable of developing and supporting the necessary infrastructure. The number of technology positions in North Dakota is expected to grow by over 90% by 2005. This tight market reflects the national statistics.

Students in the new certification program are taught to manage projects using a disciplined and consistent approach.

The high demand is driving up salaries and forcing employers to find new ways to attract and retain technology staff.

State government needs to adopt innovative methods used by private industry, such as signing bonuses and project completion bonuses. Contractors have been employed to supplement existing staff when vacancies have occurred; however, costs can be up to three times higher for contract staff versus using state employees. Education providers in the state will need to update curricula to produce the skills and number of qualified people required.

Consistent information technology project management was a major challenge set forth in the last biennium. To that end, a project management certification curriculum and training program was developed and implemented jointly by the Information Technology Department, Mayville State University and the Project Management Institute (PMI). The purpose of the state of North Dakota certification program is to build the capacity of state agencies to deliver successful technology projects. Students in the new certification program are taught to manage projects using a disciplined and consistent approach. To certify, a candidate must complete a one-semester course provided by Mayville State University and successfully pass the certification exam from PMI.

The project management certification program will serve as a model for other training efforts. Technology staff will continue to develop non-technical skills. Likewise, it is important that business managers and staff at all levels of an organization develop an understanding of technology.

To meet the evolving management needs of digital government, the state of North Dakota should:

- **Organize for e-government** - Reorganize government for efficiency, as simply implementing technology is not enough. The practice of business process re-engineering is a necessary element.

- **Recruit, Train and Retain** - Aggressively recruit technology workers who have the latest skills, insure that current technicians receive training to maintain and increase their skill levels, and establish programs aimed at meeting the professional requirements of skilled employees.

- **Train e-leaders** - Provide training that develops digital leadership skills based upon speed, flexibility and customer focus while upholding the theory of cascading leadership where everyone is a potential leader.

- **Promote project management certification** - Demand that all large information technology projects are managed by qualified project managers.

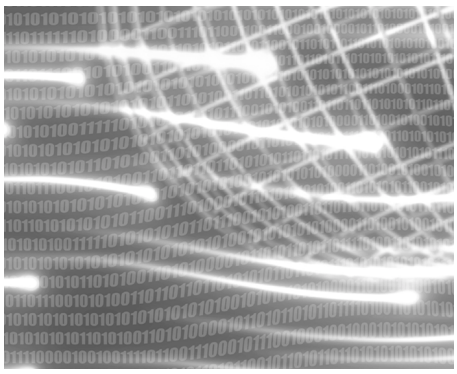
- **Prioritize at all levels** - Prioritize information technology resources at different levels, i.e. agency level, state level; to target the best use of limited dollars.

- **Reconstitute IT Advisory Committee** - Reconstitute the Statewide Wide Area Network Advisory Committee to allow representation on a statewide basis to provide a greater customer perspective. Change the purpose of the committee to act as a permanent "focus group" to provide feedback on technology planning issues.

- **Broaden research and planning** - Strengthen newly built technology-planning systems and broaden technology research that fosters sharing among agencies.

- **Create an innovation fund** - Create an innovation fund that allows agencies to take advantage of technological opportunities not foreseen during the budget planning cycle.

The project management certification program will serve as a model for other training efforts.



State government should provide the leadership for developing a shared infrastructure.

On April 20, 1999, the 56th Legislative Assembly of the state of North Dakota passed Senate Bill 2043, modifying NDCC 54.59. That law requires each state agency and institution that desires access to wide area network services and each county, city, and school district that desires access to wide area network services to transmit voice, data, or video outside that county, city, or school district to obtain those services from the state Information Technology Department.

To address the requirement of the legislature and the needs of the state's citizens, the state issued a request for proposal (RFP) for outsourcing needed assistance. The state defined three major goals to be accomplished through that procurement process:

3 Procurement Process Goals

- **Integrate WAN** - To deploy an integrated statewide network to meet both current and future telecommunications requirements for government and education.
- **Postalize service** - To achieve statewide telecommunications rate reductions through postalized service offerings for government and education.
- **Increase broadband** - To promote economic development by increasing the availability of broadband services for residential and private business needs throughout all geographic areas of the state of North Dakota.

The state of North Dakota has viewed the slow deployment of new, wider bandwidth services as an area that it can help improve, not only for state and local government, but also ultimately for the citizens of North Dakota.

Leadership for Developing a Shared Infrastructure

By integrating the combined voice, data and video traffic from state and local government, education, and libraries in North Dakota into a single wide area network, it is believed that the state's telecommunications carriers will be encouraged to deploy an extended network of advanced services throughout the entire state.

With the implementation of the RFP, the statewide broadband telecommunication network is now growing. The state will spend about $3 million to roll out the network to initial 64 communities and 218 locations by the end of the year 2000.

When complete in 2001, the network will connect 552 locations in 194 cities. At that point, state analysts believe that the network will provide the greatest universal access to high-speed telecommunication services of any rural state in the nation.

The greatest universal access to high-speed telecommunication services of any rural state in the nation.

The statewide infrastructure project has three primary goals: to deploy an integrated network to meet current and future needs for government and education; to reduce telecommunication rates by aggregating public demand and negotiating lower price for bulk service; and to stimulate economic development by making broad band services available in every county and in communities throughout the state.

"Infrastructure, workforce training, economic development and tax and public policy — these are the four pillars that are essential to a successful statewide information technology strategy in this state," according to Curtis Wolfe, North Dakota's Chief Information Officer.

Public policy needs to support affordable, universal access to high-speed telecommunication services. Just as government programs supported telephones to rural areas, the state needs to drive programs and funding models that support Internet access to all of North Dakota.

Along that same vein, technology is an important key to economic development. Tax policy and assistance programs should be geared to this. In the process of moving forward, state policy makers must remember the "first, do no harm" statement. The state must not create barriers by over regulating but must remove existing barriers based on old models.

A third public policy area concerns the impact on financial and legal transactions that are moving from paper to electronic processes. Current legislation and policy needs to be evaluated and modified, if necessary, to fit the e-government model.

Workforce training is also essential to maximize the impact of the network infrastructure and to create economic development opportunities. The state network will get the wire to the door, but schools will need video equipment and computers to access the network. Curriculum will need to be updated and teachers will need to upgrade their skills to use the new technologies.

To achieve the primary goals of statewide infrastructure, indications imply that the state of North Dakota should be prepared to spend up to $20 million to:

- **Upgrade network** - Bolster the state's hard-wired information network.
- **Explore wireless** - Explore wireless and emerging technology infrastructure possibilities.
- **Train workforce** - Advance workforce training, especially in emerging technologies.
- **Expand e-government** - Expand the government's use of technology to deliver services and to improve in-state electronic commerce.
- **Enhance the state radio network** - Plan and implement current and evolving technologies to enhance the state radio network that serves public safety agencies.
- **Promote Public Policy** - Promote public policy to encourage universal access and economic development.

"Infrastructure, workforce training, economic development and tax and public policy — these are the four pillars."

Conclusion

The planning process is an iterative one, improving and evolving as knowledge is gained from successes and mistakes. The state will see additional benefits as it moves toward a shared vision in the future as technology is used to improve customer service, improve the efficiency of state government, better manage scarce resources, and continue to build an infrastructure for information sharing.

Goals and Strategies

To help the state realize the vision, 12 goals and 32 strategies have been established.

The statewide information technology plan responds to global, national, and statewide trends and issues affecting information technology use in North Dakota State government. The vision, goals, and strategies expressed in this plan are designed to improve the management of information resources within the state. They also drive state agencies' planning for information technology, and should be a major source of guidance during any agency strategic planning effort.

The vision for information technology describes how North Dakotans will interact with government and government information technology in the future. The vision is of a future where information resources serve to make government more accessible, open, efficient, and productive for the citizens of our state.

To help the state realize the vision, 12 goals and 32 strategies have been established to provide the general direction for state government's use of information resources. These goals are categorized within each of the statewide vision threads and, along with their supporting strategies, provide an outline to assist the state in achieving its information technology objectives.

Customer Focused

Goal 1: Build E-Government

Provide access to government information and services through a secure Internet connection.

Strategy: The Information Technology Department (ITD), working with state agencies, will develop and promote a "Strategic North Dakota Digital Government" plan that focuses on the following key elements:

◊ *Applications:* Establish a coordinated, customer-focused approach to developing integrated web-enabled applications.

◊ *Infrastructure:* Establish an infrastructure that addresses items such as portals, secure access service, universal web design guidelines, security, secure signatures, e-payments, open records and privacy issues, digital archive, and help desk.

◊ *Policies and standards:* Develop policies and standards to serve as guiding principles outlining the general course of action to be followed and to direct digital government activities toward the goal of providing cheaper, better, and faster services to the public.

Strategy: ITD, with the involvement of state agencies, will identify web-application development options that provide affordable alternatives to agencies wishing to bring services online.

Strategy: Legislation should be passed to reconstitute the State Information Technology Advisory Committee allowing broader statewide representation and providing greater customer perspective.

Goal 2: Promote "Anytime – Anywhere" Education

Expand the offering of online educational courses and programs available to North Dakotans and make them available through a variety of delivery methods.

Strategy: The Education Telecommunication Council (ETC) will provide IT leadership and coordination of the various supporting entities for K-12.

Strategy: K-12 districts should form additional interactive video consortiums. The ETC should target grant funding to provide the necessary equipment.

Strategy: The Higher Education Computer Network IVN group will provide support for the statewide interactive video network, including K-12.

Strategy: The North Dakota University System (NDUS) will provide affordable, accessible education and training to both urban and rural areas of the state as outlined in the "ND University System for the 21st Century" report.

Efficient

Goal 3: Encourage Enterprise-wide Solutions

Maximize information technology investments by improving and promoting the collaboration, both among agencies and with other stakeholders, of enterprise-wide technology solutions.

Strategy: ITD will implement a centralized Geographical Information System (GIS) hub to enable sharing of GIS among users within state government, political subdivisions, and the federal government.

Strategy: ITD, in cooperation with various stakeholders, will proceed with plans to integrate the systems for collecting and reporting criminal justice information to provide better service to the customers of the systems.

Strategy: ITD will develop and support a centralized Electronic Document Management System (EDMS) infrastructure for state agencies.

Strategy: ITD, partnering with OMB, NDUS, and K-12 districts, will pursue an Enterprise Resource Planning (ERP) solution that will integrate the core financial and administrative applications of state government, higher education, and public education.

Strategy: ITD and the NDUS will acquire data warehousing and decision support tools that fully integrate with the ERP system and other vital state management information systems to facilitate strategic planning, tactical operations, and system-wide analysis.

Goal 4: Reinvent Government

Strive to reinvent state government by removing barriers to cooperation, aligning delivery of products and services from an integrated, customer focused approach, and providing opportunities for user input, outside expertise, and business process redesign.

Strategy: ITD will develop information resources, guidelines, and procedures to promote the practice of assessing and redesigning business processes within state government.

Strategy: ITD will require business process assessments as a prerequisite to all information technology projects falling under the "large project reporting" guidelines.

Goal 5: Strengthen State IT Professionals

Recruit, train, and retrain state government technology professionals.

Strategy: Central Personnel, in cooperation with ITD and NDUS, will develop a list of statewide information technology educational opportunities.

Strategy: Central Personnel and ITD, with the involvement of state agencies, will develop responsive action plans that respond to IT workforce issues. Specific actions will focus initially on:

◊ Developing incentive alternatives to help recruit and retain IT employees.

◊ Developing comprehensive recruitment initiatives that would include active internship programs.

◊ Developing training and scholarship programs for state employees with skills, abilities and interests in a technology career.

Strategy: ITD will acquire statistics to help agencies determine appropriate support staffing levels for information technology positions.

Goal 6: Advance Project Management

Effectively manage state government information technology projects by utilizing the practices and techniques of professional project management.

Strategy: ITD and the NDUS will continue to develop and promote educational opportunities that develop or enhance the project management skill of individuals responsible for projects.

Strategy: ITD will encourage the use of certified project managers to oversee IT projects and require all projects falling under the categorization of a "large project" to be managed by qualified project managers.

Goal 7: Coordinate Technology Research & Planning

Coordinate and share the research of emerging information technologies across all of state government.

Strategy: ITD will develop a centrally coordinated process to facilitate and communicate information technology research in state government. The process will study industry trends and analyze agency objectives to determine areas where collective research would provide benefit. The process should also bridge research activity between state government and higher education.

Strategy: ITD and NDUS will assess opportunities and initiate pilot projects employing leading edge technologies such as Internet access from hand-held devices, electronic business-to-business transactions, wireless broadband communications, voice over IP, or voice recognition.

Goal 8: Fund Innovations

Provide more flexible mechanisms to support the funding requirements of information technology projects.

Strategy: ITD will obtain legislative approval to establish an Innovation Fund. The fund will serve as a funding mechanism for key technology initiatives.

Strategy: ITD will pursue bonding as an option to finance large-scale information technology initiatives, such as the Enterprise Resource Planning initiative.

Leadership
for Developing a
Shared Infrastructure

Goal 9: Integrate State Broadband Network

Build a network infrastructure to support digital opportunities for economic development, life long learning, and government services throughout the state.

Strategy: ITD will expand the statewide network to every public high school.

Strategy: SENDIT Technology Services, ITD, NDUS, and the Association of Counties will expand their support services to meet the demands of the growing number of network users.

Strategy: ITD will leverage the state broadband network by providing assistance to local entities to create community networks.

Goal 10: Modify Public Policy

Evaluate and modify current legislation and policy to reflect the needs of a digital society.

Strategy: ITD, working with the legislative information technology committee and other government leaders, will monitor federal and state legislation and proposed uniform state laws to identify implications for North Dakota, particularly with respect to privacy, security, and validity of online transactions.

Strategy: The Chief Information Officer, working with leaders from government and private industry, will identify and advance public policies to promote universal access to online services and encourage widespread economic development.

Goal 11: Develop Workforce

Assist North Dakota in becoming a player in the digital economy by developing a highly trained workforce that attracts new businesses and provides technical support to existing businesses.

Strategy: The NDUS will expand workforce development programs to meet the needs of ND employers.

Strategy: The ETC, Center for Innovation and Instruction, and SENDIT Technology Services will develop and promote programs that serve to expand curricula and technology training to the teachers and administrators who will integrate technology into K-12 classrooms.

Goal 12: Enhance State Radio Network

Expand the capabilities of the state radio network to provide mobile data communication and migrate to newer digital technologies.

Strategy: State Radio will identify and implement a plan to convert the existing network from analog to digital.

Strategy: State Radio will develop a plan to formulate a systems design concept that supports future mobile voice, data, and imaging requirements

Strategy: State Radio and Highway Patrol will expand the mobile data terminal (MDT) system by 10 towers and 36 additional cars.

Enterprise Information Technology Architecture

Information Technology can enable government to restructure operations and rethink service delivery mechanisms. These changes are necessary for government to work better, cost less, and become more citizen focused.

Standards and policies provide the basis for the development of a common statewide information technology architecture that enables efficiency and effectiveness in government. These standards and policies direct technology purchases and implementation, ensure the compatibility of systems, and improve communication between systems and government entities.

North Dakota Technology Vision

- State government should be customer focused.
- State government should be efficient.
- State government should be well managed.
- State government should provide the leadership for developing a shared infrastructure.

Information Technology Strategies

Information technology strategies also serve as a guide to agencies in their planning for and implementation of technologies.

Standards and policies establish specific rules for the development of the technology infrastructure; however, statewide technology strategies establish the direction of technology in North Dakota. These strategies set the direction for each component of the technology infrastructure and provide a foundation for the specific standards and policies.

Information technology strategies also serve as a guide to agencies as they plan for and implement technologies. The following strategies and proposed strategies provide guidance for the coordinated development of the state information technology architecture, thereby providing the necessary building blocks with which to attain the North Dakota technology vision.

Statements of direction follow each strategy.

Strategy: Operating Systems and Platforms

Operating systems and platforms will support a highly networked, workstation based, distributed databases architecture. Existing platforms in this architecture include the Information Technology Department's enterprise server, which currently runs network applications and databases as well as legacy systems.

The state standards will reflect the industry trend toward open systems and advance the implementation of a consistent end-user interface to a variety of distributed computing services. Operating systems will support a wide range of commercially available software and development tools and the system platforms will allow for application migration to other platforms as they grow.

Support costs will be reduced through standardization within agencies across the enterprise. Purchasing policies will support the efficient and timely purchase of products that meet the standards.

Statement of Direction:

◊ Ensure the delivery of government information and services anytime, anywhere - 24 hours a day, 7 days a week (24 X 7).

◊ Maintain high-availability systems through the implementation of system redundancy, mirroring, efficient backup systems and other technologies that minimize system downtime.

◊ Coordinate the establishment of improved state purchasing contracts with the State Procurement Office to facilitate the prompt purchase of new and replacement hardware at the best possible unit cost.

◊ Implement Windows 2000 and Active Directory to enhance state, as well as local agency, network administration and reduce the cost of network administration.

◊ Incorporate multiple platforms for web applications servers with Unix or NT as the preferred operating systems.

◊ Centrally administer software maintenance and upgrades to reduce support costs.

Strategy: Network Services

Communication between agencies and with external customers requires a single, secure, integrated wide area network that is reliable, widely available, and allows for flexible growth. The network architecture will be based on common, open, non-proprietary protocols and on industry and product based standards.

Network capacity will provide sufficient bandwidth for future expansion and multiple data formats, including voice and video. Commercial services will be used when appropriate and economically justified. Remote access will be available to state agencies with mobile employees or distant offices.

Political subdivisions will be provided the opportunity to connect with state agencies and resources.

Statement of Direction:

◊ Complete the integration of the new state broadband network in the fall of 2001. This network will carry voice, video and data from state and local government, education, and libraries over a Asynchronous-Transfer-Mode (ATM) network system.

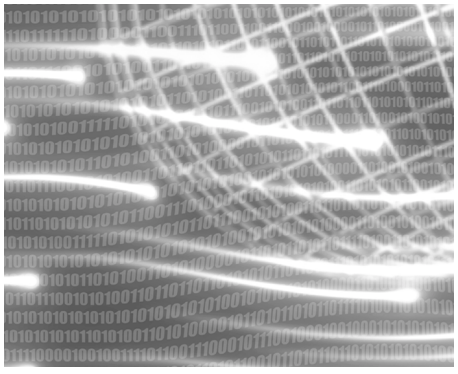
◊ Replace network routers and hubs with switches to develop a flatter, switch-based network.

◊ Complete the conversion of all non-TCP/IP based networks to the TCP/IP standard.

◊ Evaluate wireless technology development and its application for the improved delivery of state information and services.

◊ Upgrade the statewide radio communications network from analog to digital.

◊ Continue to evaluate the technology of voice over IP.



Strategy: Application Development

All application development must support the mission and business objectives of the agency.

To maximize the productivity of system developers, application development will use common processes, languages and tools.

When designing an application, the following requirements should be considered:

- Performance
- User requirements for ease of use
- Ongoing operations and support costs
- Internet accessibility

The use of reusable objects will be considered to reduce development costs.

When possible, development technologies will be used that allow applications to migrate between platforms as they grow.

Databases should be independent of the application to allow for system development flexibility.

Before development or purchase of a new application, the availability of appropriate maintenance and support must be evaluated.

Along with rapid changes in technology, application development advancements will be evaluated and migration processes to the new technology developed as needed.

The number of web enabled applications will grow as the Internet becomes the common vehicle for access to public information.

Statement of Direction:

◊ Evaluate the use of vendor or commercial software, whenever possible, to effectively support the agency business functions and reduce development time and cost.

◊ Apply CORBA (Common Object Request Broker Architecture) development techniques to provide reusable objects that cross development languages thereby reducing development cost.

◊ Continue the evolvement of the North Dakota web portal as the primary vehicle for citizen access to all state agency services and information.

◊ Continue the use of web browser technology as the client of choice for client server applications thus minimizing user support and installation of client application software.

◊ Move toward Java and XML software development technologies that support many web designer tools and runs on all platforms.

Strategy: Data Management

Data is the raw material from which information is produced and the quality, reliability and integrity of the data must be maintained for the information to be useful.

As a capital resource, information will be shared wherever possible, however, definitions of the data must be understood so that it is used consistently across the organization.

Public data warehouses will be considered as a vehicle to provide access to information in an easy to use fashion.

Databases should allow for the storage of multiple object types thereby enhancing the value of the data.

The state will move to the use of relational database management systems because of advantages in terms of access, flexibility and ease of use.

The investment in application development should be protected from changes in vendor direction by choosing, when possible, database management systems that are independent of the platform and application development tools.

The standard will include several commercial database management systems designed to target specific markets.

A database management system should be chosen for the application based on the following requirements:

- Size of workgroup
- Accessibility
- Security
- Ease of use
- Anticipated growth
- Business needs
- Performance
- Support and maintenance requirements
- Cost
- Size of database
- Portability
- Product stability

Statement of Direction:

◊ Continue the development of and the conversion of application systems from legacy databases, such as ADABAS, to relational database systems.

◊ Apply the use of data warehousing technology to improve the efficiency of application systems and the availability of data.

Strategy: Web Development

The development of dynamically linked web sites in an accessible, user-friendly format that provides quick, simple access to government information and services. Reducing costs and streamlining government by providing greater access to information and more convenient government services.

Statement of Direction:

◊ Continue the delivery of customer focused access to government information and services on the web as well as marketing North Dakota government services via e-commerce.

◊ Develop and use standardized functions and processes, such as the credit card payments, to control development costs plus maintain a common look and feel in web applications.

◊ Enhance the delivery of government information and products with the integration of voice, video and graphics in web applications.

Strategy: Telecommunications

State government, including higher education, should have highly reliable telephone systems. These systems should provide state of the art features that enhance the productivity of state employees, academics, researchers, students, and afflitates and allow better citizen access.

Statement of Direction:

◊ Expand the application of Interactive Voice Response (IVR) to supplement the 24 X 7 availability of government information and products.

Strategy: Office Automation

Office automation software will enhance the efficiency and productivity of state personnel.

Office automation product standards will be used to maximize information sharing and will be supported by purchasing options such as state contracts and site licensing.

Each agency will be responsible for the management of its software licenses.

The use of office suite software provides for the integration of software applications and allows for the easy transfer of data from one application to another.

E-mail communication is a very important function within and outside state government and requires high reliability and availability.

E-mail systems need the capability to include attachments as a way of sharing information

The direction of the state e-mail system is towards an enterprise mail system with all mail routed to a single domain for state agencies, excluding higher education, and an easily accessible state e-mail directory.

The Internet, via agency web sites, has become the vehicle for public access to information, replacing or augmenting paper publications. This will drive the need for office automation products that support HTML as a language for formatting information.

Statement of Direction:

◊ Use regularly planned upgrades of office automation software to reduce the number of versions supported within an agency and improve information sharing.

◊ Coordinate with the State Procurement Office for the creation of state contracts to improve the acquisition of agency business application products.

◊ Promote the state enterprise e-mail system as the e-mail system of choice for all state entities.

Strategy: Document Imaging

A document imaging system can potentially reduce paper document storage costs, improve document sharing, provide faster access to documents, and route documents electronically.

Such systems can also eliminate the delays inherent to the handling of paper, thereby improving customer service though faster access to information.

All paper documents requiring access by multiple users or applications are candidates for document imaging.

As with all new technology, a cost benefit analysis should be prepared prior to the purchase of such a system.

Statement of Direction:

◊ Establish a core EDMS enterprise system accessible to all state agencies.

Strategy: Video Conferencing

Video conferencing is encouraged as an effective means of increasing productivity, extending services and reducing travel time and expense.

Standards and policy will provide for the flexible expansion and maximum connectivity of state video conferencing facilities with each other and with external users.

The benefits of video conferencing may be further expanded by the use of emerging technologies such as desktop video and IP multicasting.

Statement of Direction:

◊ Expand the available interactive video options on the new broadband statewide network.

◊ Improve the availability of shared services to all state entities, schools and political subdivisions.

Strategy: Project Management

Projects are by definition a temporary process designed to achieve a clearly defined goal or objective within given resource constraints such as time and budget.

The standards and policies will ensure that a disciplined, managed, and consistent approach will be used to manage projects, resulting in the delivery of quality products, on time and within budget.

Project management, by its very nature, is an iterative process involving planning, monitoring, evaluating and taking corrective action throughout the project.

Because information technology projects vary in size and scope, project management guidelines must be flexible enough to accommodate a wide variety of projects from small, well-defined efforts with readily achievable goals to large, complex or risky ventures.

Statement of Direction:

◊ Establish a common understanding of project management and promote the successful management and completion of information technology projects.

◊ Promote the certification of project managers of large projects.

Strategy: Geographic Information Systems (GIS)

The development of an enterprise GIS system will provide for the sharing of digital spatial data among North Dakota agencies, departments, institutions, and the public.

An enterprise system facilitates the development of efficient and cost effective GIS in state entities and promotes the integration of information and maximizes the availability and use of data among state entities.

Statement of Direction:

◊ Implement a core GIS data warehouse or hub to serve as centralized storage of all spatial data accessible to all agencies and the public.

◊ Promote the development of web browser access to GIS information.

Strategy: Security

Security policies and standards cover the physical and electronic access to information as well as the transmission, storage, and processing of information. Security measures will be taken to prevent unauthorized modification or the destruction of critical information or systems. Implementation of security measures must also protect the confidentiality of the sensitive data from unauthorized access.

Risks associated with unauthorized access should be analyzed and balanced against the cost of protecting the information to ensure that business activities are not unduly hindered or unnecessary costs incurred. The owning agency shall identify the security requirements of their information based on legal requirements and agency policy and will authorize access to the data on a need-to-know basis.

Maintaining the security of the data is a joint responsibility between Information Technology Department, state agencies, and their customers who access the data.

Statement of Direction:

◊ Secure remote network access by the implementation of Virtual Private Networks (VPN).

◊ Use secure web transactions in the transmission of data to and from state entities.

◊ Implement policies and procedures for the use of digital signatures as the approved authorizing signature on electronically submitted forms and documents.

◊ Ensure user privacy on state web sites by implementation of the fair information practice principles of notice, choice, access and security.

◊ Implement intrusion prevention and detection tactics, and strengthen policies and standards, in addition to security awareness training, to ensure best practices are implemented to reduce risk.

Statewide Budget Initiatives

This section identifies the statewide budget initiatives required to implement the strategies outlined in the previous sections. North Dakota's future depends on moving forward at Internet speed. To take advantage of opportunities available only at this point in time, it is critical that funding be provided to move the state forward. North Dakota cannot afford to be left on the wrong side of the digital divide.

North Dakota's future depends on moving forward at Internet speed.

While individual agencies may also have high priority technology initiatives, those listed here benefit state government as an enterprise and effect multiple agencies and a broad spectrum of services to citizens. They are listed in priority order along with a brief description and supporting information about the budget requests.

1. Broadband state wide area network implementation

Goal 9: Integrate Broadband Network

This initiative creates the physical network infrastructure to support digital opportunities for economic development, life long learning, and government services throughout North Dakota.

The broadband network will expand the capacity and coverage of the information super highway. In the current biennium, the 60 locations on the existing state wide area network will be converted to newer technology.

When complete, 552 physical locations in 194 North Dakota towns and cities will be connected.

The state role as an anchor tenant will mean that new services provided to education and government will be available to private industry as well. The Information Technology Department (ITD) is requesting general funds to support the K-12 connections to the wide area network as mandated by NDCC 54.59.

The state role as an anchor tenant will mean that new services provided to education and government will be available to private industry as well.

Entity	Item	Planned Budget
All State Agencies/ITD	The estimated increase in ongoing circuit costs billed by ITD for agencies to connect to the new network.	$1,461,000
County Government /ITD	The estimated increase in ongoing circuit costs billed by ITD for counties to connect to the new network.	$126,000
NDUS/ITD	The increase in ongoing circuit costs for upgrading NDUS circuits to the new network.	$542,000
State Agencies including Higher Ed/ITD	Equipment costs billed by ITD for the initial installation.	$1,476,570
ITD/K-12	State circuit costs, network equipment costs, and staffing to connect all high schools to the network. Estimated E-rate credit	$7,910,082 ($3,700,000)

2. State network Support

Goal 9: Integrate Broadband Network

Currently four organizations work together to support the customer base of the state network.

Currently four organizations work together to support the customer base of the state network. ITD provides the overall coordination and support for state agencies, the Higher Education Computing Network (HECN) provides support for the North Dakota University System campuses, the Association of Counties provides support for county government offices, and SENDIT Technology Services provides support for K-12 users.

With the expansion of the network, support demands on these organizations will increase.

To take full advantage of the new capabilities, it will be imperative that these organizations grow their services into regional markets and assist agencies, schools and local government offices in accessing the new network.

Entity	Item	Planned Budget
State agencies/ITD	Additional FTEs for network support (included in ITD rates).	$309,317
ITD/Association of Counties	Expand support provided by the Association of Counties.	$248,000
ITD/SENDIT	Expand support to 8 regions for K-12 schools.	$1,427,000
NDUS/IVN	Expand support for video conferencing for K-12 schools.	$2,739,194

3. Video conference and LAN equipment

Goal 9: Integrate Broadband Network
Goal 2: Promote "Anytime - Anywhere" Education

The broadband network initiative will create access at the building level. To connect *people* in offices and meeting rooms, additional equipment will be necessary so that video conferencing and local area networks can take the applications to the delivery point.

The Education Telecommunication Council will be responsible for targeting grant dollars to those schools that provide the best opportunity for taking advantage of the network.

To accomplish this, the Education Telecommunication Council will be responsible for targeting grant dollars to those schools that provide the best opportunity for taking advantage of the network. The ETC will take a leadership role in the planning and evaluation of the implementation of technology throughout K-12. State agencies and higher education have included these equipment costs in their information technology plans and budgets where appropriate.

Entity	Item	Planned Budget
ITD/Education Telecommunications Council (ETC)	Included are grant funds plus the cost of staff to provide leadership and administration.	$3,500,000
State Agencies including Higher Ed.	Initiatives are included in individual agency IT plans.	

4. Workforce development and distance education

Goal 11: Develop Workforce
Goal 2: Promote "Anytime - Anywhere" Education

For North Dakota to become a player in the digital economy, the state needs a highly trained workforce to attract new businesses and provide technical support to existing businesses.

Distance education, fast becoming a very competitive market world-wide, will play a vital role in providing training to under served areas of the state and attracting students to North Dakota colleges and universities.

The state needs a highly trained workforce to attract new businesses and provide technical support to existing businesses.

It is essential that our teachers have the necessary skills and tools to integrate technology into the curriculum and use new methods of delivery.

Entity	Item	Planned Budget
ITD/VCSU/CII	Additional funding for expanded training to administrators and teachers who will integrate technology into K-12 classrooms.	$594,000
NDUS	Provide centralized online course management systems and support necessary to deliver work-force training over the Internet ($935,100), coordination of distance education activities ($498,200), and ODIN ($422,980).	$1,856,280
ITD	Expand technology curriculum offerings to additional schools. Use programs like ExplorNet and Cisco Academies to provide ready-to-use curriculum and teacher training to schools.	$590,300

5. Enterprise Resource Planning (ERP) system

Goal 3: Encourage Enterprise-wide Solutions

All of North Dakota State Government will benefit from this project to replace aging administrative systems. This project stems from University Systems efforts over the past several years to replace its financial and student systems. K-12 districts will benefit from the increased buying power of the state and compatibility in reporting requirements.

The new administrative systems will eliminate the growing trend toward "shadow" systems.

The new administrative systems will be based on technologies that allow for greater access to data to improve management decision making and will eliminate the growing trend toward "shadow" systems. Online access for post secondary students to apply, register and do transactions online is critical to attracting students to North Dakota colleges and universities.

Entity	Item	Planned Budget
ITD	Replace existing financial, human resource and student information systems for state government, higher education, and K-12. The estimated cost is used for budget purposes and will be refined when vendor proposals are received.	$20,000,000

6. Geographic Information System (GIS) hub

Goal 3: Encourage Enterprise-wide Solutions

A study by Convergent Technologies recommends the development and support of a centralized Geographic Information System hosting infrastructure (GIS hub) for North Dakota state agencies and their partners.

The GIS hub will provide a means of sharing the GIS information now being stored locally at each agency. ITD will also provide centralized GIS development and support services to agencies who cannot justify full-time GIS staff. This initiative will also create the infrastructure for web-enabling GIS information reporting.

The GIS hub will provide a means of sharing the GIS information now being stored locally at each agency.

Entity	Item	Planned Budget
ITD	Implement a centralized GIS hub to enable sharing of GIS among users within state government, political subdivisions and the federal government.	$1,059,317
Various agencies	Initiatives are included in individual agency IT plans. These initiatives are necessary for the individual agency to collect and analyze GIS information for specific purposes.	

7. Innovation fund

Goal 8: Fund Innovations

An innovation fund should be established to provide flexible funding for information technology projects that arise during the next biennium.

This fund would serve as mechanism to provide dollars for cost effective projects beyond what was originally appropriated to individual agencies. Agencies utilizing the resources of this fund would pay back the fund with interest to maintain an on-going resource.

Entity	Item	Planned Budget
ITD	Establish an "Innovation Fund" as a mechanism for funding key technology initiatives.	$500,000

8. Shared Electronic Document Management System

Goal 3: Encourage Enterprise-wide Solutions

This initiative includes the funding to develop and support a centralized Electronic Document Management System (EDMS) infrastructure for North Dakota state agencies. This infrastructure would be centrally managed by ITD with the cost billed back to the participating agencies versus implementing similar technologies locally in each agency.

Entity	Item	Planned Budget
ITD	Implement centralized EDMS services.	$1,309,317
Various agencies	Initiatives are included in individual agency IT plans. Funds requested in the agency initiatives may be used to purchase the centralized services from ITD and for other project costs such as document scanning.	

9. E-government

Goal 1: Build E-government

Government service delivery will move from the "brick and mortar" approach to delivery over the Internet. Citizens will receive services online instead of in line.

Extensive programming and development will be needed to produce these online applications. ITD will be a key provider of development and hosting services for e-government applications.

To create a seamless approach to government, a single interface to multiple applications across agency lines is needed. State funding is necessary to develop these enterprise wide applications

Entity	Item	Planned Budget
ITD	Direct general funds to the development of the state portal and enterprise wide applications.	$321,228
Various agencies	E-government initiatives to move specific services online are included in individual agency IT plans.	

Government service delivery will move from the "brick and mortar" approach to delivery over the Internet. Citizens will receive services online instead of in line.

10. Security and privacy

Goal 1: Build E-government

As we expand the network and move more services to the e-government model along with federal mandates such as the Health Insurance Portability and Accountability Act (HIPAA), information technology security is becoming more critical and more complex. Central leadership and expertise is necessary to identify solutions the state can implement on a proactive basis. Monitoring of intrusion attempts is also critical to maintain the integrity of the network.

Entity	Item	Planned Budget
ITD	ITD is requesting general funds for 1 FTE to assist the Attorney General's office along with other law enforcement agencies in investigating cybercrime. An additional FTE at ITD will provide expertise and leadership in helping the state to adequately secure its information technology resources.	$275,548
Various agencies	Initiatives to improve security at the agency level are included in individual agency IT plans.	

11. Research and planning

Goal 7: Coordinate Technology Research & Planning

Greater emphasis needs to be placed on research and planning so that North Dakota can identify trends and new technologies instead of reacting as technologies change.

By getting out in front of technology change, the state will prevent wasteful spending and make better decisions when choosing technologies to be implemented.

By getting out in front of technology change, the state will prevent wasteful spending and make better decisions when choosing technologies to be implemented.

Entity	Item	Planned Budget
ITD	Enhance the research and planning capabilities of state government by adding positions to identify technology trends and implications for North Dakota. Additional funds would be used for contracting for studies and research.	$310,614

12. Mobile Data Terminal expansion

Goal 12: Enhance State Radio Network

The pilot project to implement mobile data terminals in Highway Patrol vehicles has been extremely positive.

Officers find that they spend an additional one hour per person per shift in the car rather than in the office doing paper work.

This project will expand the coverage to other areas of the state.

Providing the technology through state radio also makes it available to local law enforcement agencies where the towers are located.

Entity	Item	Planned Budget
State Radio	Add MDT capabilities to 5 additional radio towers.	$260,892
Highway Patrol	Purchase mobile data terminals for 20 additional cars.	$220,000

13. State Radio Communications

Goal 12: Enhance State Radio Network

Radio communications technology is moving from analog to digital and at some point will be required by the FCC.

This massive project will need to be accomplished over a number of years.

Continuous planning will be an important part of this endeavor so that local, state and federal public safety entities can participate in and migrate to newer mobile radio technologies with minimal impact on existing services.

Entity	Item	Planned Budget
State Radio	Develop a plan, including an engineering study and request for proposal for implementation of a public safety communication system to support mobile voice, data, and imaging requirements for system users.	$400,000

14. Criminal Justice Integration

Goal 3: Encourage Enterprise-wide Solutions

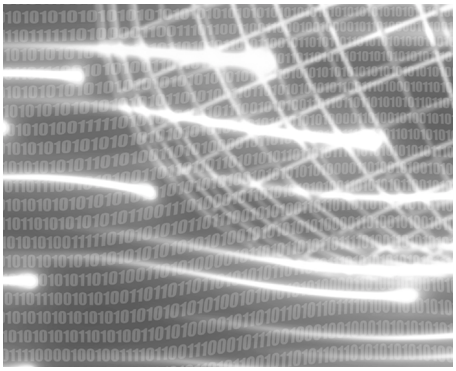
A strategic plan will be developed by March 2001 outlining specific steps to integrate criminal justice systems in North Dakota. Small integration projects between agencies are currently underway and will be incorporated into the overall plan.

The establishment of a technology fund will allow management to make decisions on the priorities of system-wide projects when better information about costs and technologies is available.

The planning process involves all the state entities involved in public safety including the Judicial Branch, the Attorney General's Office, the Department of Corrections and Rehabilitation, Highway Patrol, State Radio, and the Department of Transportation.

The process also includes local and regional law enforcement entities.

Entity	Item	Planned Budget
Various agencies	Initiatives are included in individual agency IT plans. Grant dollars will be sought to fund the majority of new costs.	



Accomplishments

While the state information technology plan focuses on the future, many agencies are already taking a leadership role in implementing technology projects. This section highlights a few of the many recent agency accomplishments.

Distance Education

There are over 140 online courses available from the campuses of the NDUS.

During the school year, 1999-2000, there were 1,752 enrollments in online courses across the North Dakota University System. This reflects a 500% increase from the 350 enrollments of 1997-1998.

At the present time, there are over 140 online courses available from the campuses of the NDUS including:

- Bismarck State College
- Dickinson State University
- Mayville State University
- Lake Region State College
- Minot State University
- Minot State University-Bottineau
- North Dakota State University
- Valley City State University
- Williston State College.

Online course and program developments are also underway on the following campuses:

- North Dakota State College of Science
- University of North Dakota

Digital Government

The state launched a new web portal aimed at providing easier access to services and information from all state agencies via the Internet. The web site, *www.discovernd.com*, is organized by functions not agencies and represents the first big step in using technology to rethink the way government interacts with and serves people.

DiscoverND uses subjects and keywords for categorization rather than agencies. The site also organizes similar services together under general headings such as education and employment.

Other features include a newsroom that provides access to the latest agency news, weather and road reports, employment listings, a kid's page, and online access to business-registration forms. Electronic government options include:

- Contractor License Inquiry
- E-Forms
- Game & Fish Hunting Lottery Applications
- Harvest Inventory Program
- ITD IT Plan Submission System
- New Business Registration
- Purchase Hunting and Fishing Licenses
- Purchase Birth, Death, and Marriage Certificates
- Standard Medicare Supplement Plans and Premium Comparison
- State Procurement Office Online Systems

Hunting and Fishing Licensing

Toll-free phone license sales is a popular technology introduction of the Game and Fish Department. By contracting with a telemarketing company from Williston, the ability of a customer to purchase any kind of license or apply for one of the

license lotteries was dramatically streamlined. The use of this system has skyrocketed since its inception. A side benefit has also been a dramatic increase in magazine sales due to suggestive selling on the part of the telemarketer.

Establishing an Internet based licensing and lottery application system has impacted positively on the way Game and Fish does business. It expands the ability to purchase a license in remote areas from any computer with Internet access and decreases over-the-counter traffic.

Establishing an Internet based licensing and lottery application system has impacted positively on the way Game and Fish does business.

New Business Registration

The office of the Secretary of State has collected information that assists new entrepreneurs in planning and establishing a business. Topics include business planning, licensing, registering a business name, sales tax requirements, protecting a business, and other state requirements. In paper form, the effort is collectively called the "Green Book." This same information is now electronically accessible on the World Wide Web.

The office of the Secretary of State has collected information that assists new entrepreneurs in planning and establishing a business.

Legislative Information

The Legislative Council completed the 1999 Legislative Information Compact Disk (CD), which contains information on the 56th Legislative Assembly, the Legislative Council, 1999 measures considered by the Legislative Assembly, 1999 legislation, House and Senate journals, legislative rules, and 1999-2000 interim studies. CD upgrades include legislative rules and a search engine.

The legislative branch web site was enhanced to include interim study information from the previous and current interims, complete agendas of Legislative Council interim committee meetings, legislative rules, the legislative drafting manual, a limited search (find) feature of documents in the North Dakota Century Code, and information on the 57th Legislative Assembly (2001).

Employee Retirement

During 1999, the Public Employees Retirement office developed a new deferred compensation system on the mainframe that integrates with the retirement system, which is also on the mainframe.

Previously, demographic information for retirement and deferred compensation members had to be maintained on two systems; the new system allows for demographic information to be updated on both systems simultaneously, thus saving data entry time and increasing accuracy.

Having the deferred compensation system on the same platform as the retirement system also provides for efficient integration between the two systems for the administration of the new vested employer contribution provision of the defined benefit retirement plan that became effective January 1, 2000.

The 1999 Legislative Assembly passed legislation creating a new Defined Contribution Retirement System, effective January 1, 2000. The Public Employees Retirement office developed a new system on the mainframe to administer this retirement plan. This project includes electronic transmission of participant data, contributions and transfers to Fidelity Investments, the record keeper for the plan.

Wireless Data Transfer

The state Highway Patrol, in conjunction with State Radio, completed the first stage of a wireless data transfer system.

The first stage of the system included ten tower sites and sixty-five patrol vehicles outfitted with a laptop computer, docking station, printer, and radio modem. The sites used existing towers that have been placed around the nine major cities and Cleveland, North Dakota, to provide seamless coverage along Interstate-94. The patrol vehicle units are called Mobile Data Terminals or MDTs.

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The major reason behind the wireless system was to increase patrol time. Efficiency reports substantiate that patrol time has increased and office time has decreased. Because data is entered directly into the MDT instead of paper, the workload for both district secretaries and data entry staff has decreased, allowing the reduction of the data entry staff by one temporary employee.

Imaging

The Housing and Finance Agency implemented an imaging system that reduced document storage needs as well as enabled employees to be more productive by providing necessary loan information online. This allows for better response times to customers.

The reduction in storage also made possible the creation of additional office space at no cost.

State Procurement

Completion has been achieved in the design, development and implementation of the vendor data base, interactive agency requisition, internal bid processing functions and the internal purchase order issuance functions. The final phase will include the design of the interactive purchase order.

The purchasing card, or PCard, is the part of the new state program that authorizes the use of a purchasing card for individual transactions up to $1000. The purchasing card is a tool for designated agency employees to make low-dollar purchases for official agency business needs.

The card eliminates the need for purchase requisitions/orders that previously had to be created and authorized prior to buying qualifying items.

The system allows the Office of Management and Budget to obtain a consolidated electronic billing file and make one payment to VISA on behalf of all cardholders. Expenditures are then posted to the appropriate agencies for each PCard. Job Service North Dakota, the Game and Fish Department, and Facility Management are among the 10 agencies that initially successfully piloted the PCard.

Well Managed

Year 2000

The Year 2000 (Y2K) rollover occurred problem-free. As the rest of the world watched fireworks and partied, information technology professionals were at their workstations, checking hardware and software to ensure that everything ran as normal. The state of North Dakota did not experience any outages related to Y2K.

The Information Technology Department, working with the Risk Management Division, the Attorney General's office, the Division of Emergency Management, and others, implemented a planning model that guided state agencies through the phases of inventory and assessment, analysis and planning, conversion and testing, and implementation. Contingency plans developed during this process are helping in ongoing operations.

Emergency Operations

Once physical renovations to the state Emergency Operations Center (EOC), located at Fraine Barracks in Bismarck, were completed in early 1999, work began to ensure computer capability among the 47 agencies that provide support to state operations during emergencies and disasters.

Through a careful evaluation of equipment and coordination of users and data processing coordinators, several agencies have fully connected their local area networks (LANs) to the EOC.

The division also replaced its phone system with the state standard, a move that resolved user-related problems that surface when other state agencies staffed the EOC. The standard allows the users to forward their phones to their temporary EOC location.

Automated Fingerprinting

The Attorney General's office automated fingerprinting and files and created links to the Federal Bureau of Investigation and state criminal history systems.

Online Information Technology Planning

The information technology planning process was revamped. An online information technology plan reporting system named PlanIT was implemented and tied to the budget reporting system to reduce manual data entry and reconciliation of budget information.

Project Management

The Information Technology Department's Planning Division developed guidelines for project management. Agencies are required to use the guidelines for large projects and encouraged for all or portions of smaller projects. A process for quality assurance reviews of large projects was implemented.

To build the capacity of state agencies to deliver successful projects, the Information Technology Department worked with the North Dakota University System to develop a project management curriculum for state agency personnel. Mayville State University, with guidance from the Information Technology Planning Division and the Project Management Institute, began offering a three-credit course in Project Management leading to state certification. The course covers terminology, phases and processes, in-depth discussion of the nine knowledge management areas of project management, and project plan writing. Twenty-eight individuals have certified.

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Case Management

The Department of Corrections and Rehabilitation's Juvenile Services' Case Management project established an integrated data management system to make "real-time" data available to community caseworkers, as well as Youth Corrections Center counselors, teachers, and administrators. It addressed the deficiencies of the former system, and expanded on the data elements essential to case planning such as: treatment, education, placement and evaluation.

The state believes that an ATM/SONET network is the preeminent approach, considering present state-of-the-art technology.

Leadership for Developing a Shared Infrastructure

Integrated State Broadband Network

The state of North Dakota took a big step forward in building the new statewide, broadband telecommunication network that has connected 122 locations in 64 cities throughout North Dakota.

Governmental partners in the creation of the network include the Information Technology Department, the Higher Education Computer Network (HECN), SENDIT Technology Services, and the North Dakota Association of Counties. When complete, North Dakota's network will provide the greatest universal access to high-speed telecommunication services of any rural state in the nation.

By integrating the combined voice, data and video traffic from state and local government, education, and libraries in North Dakota into a single wide area network, it is believed that the state's telecommunications carriers will be encouraged to deploy an extended network of advanced services throughout the entire state.

The state believes that an ATM/SONET network is the preeminent approach, considering present state-of-the-art technology. The real time delivery of two-way IP-based video is essential to meet the requirements of government and education. The extent to which the network 'cloud' covers the geography of the state is important to the economic development goal of this endeavor.

The goal is to have the network up and running in 552 locations and 194 cities by the fall of 2001. Communities were chosen to be part of the network based on having one or more of the five criteria: a high school, library, higher education facility, county seat or state government facility.

Topology Standardization

Through leadership from the Information Technology department, the statewide conversion from the token-ring local area network (LAN) topology to Ethernet will be completed in 2001.

Dynamic Configuration

Dynamic Host Configuration Protocol (DHCP) has been implemented within the state.

DHCP allows Internet protocol addresses to be served by domain name servers saving network administrators the time of having to make individual assignments and allowing state network operations technicians to move whole blocks of addresses without disruption in services.

Interactive Voice Response

A new Interactive Voice Response (IVR) replacement system for managing inbound telephone call traffic was implemented and application development is progressing.

Agencies with notable IVR applications include the Department of Human Services, the Department of Game and Fish, the Workers Compensation Bureau, Job Service North Dakota, and the Bank of North Dakota.

Video Conferencing

Video conferencing is another area of growth, specifically with the James River Correctional Center, the North Dakota University System, and Department of Human Services.

The Interactive Video Network (IVN) was brought up on a high-speed Internet link across the LATA.

Online Dakota Information Network

Thirteen libraries were added to the Online Dakota Information Network (ODIN).

Glossary

Bandwidth: A measurement of the volume of information that can be transmitted over a network at a given time. Think of a network as a water pipe - the higher the bandwidth (the larger the diameter of the pipe), the more data (water) can pass over the network (through the pipe).

Broadband: A transmission medium capable of supporting a wide range of frequencies, typically from audio up to video frequencies. It can carry multiple signals by dividing the total capacity of the medium into multiple, independent bandwidth channels, where each channel operates only on a specific range of frequencies.

Data Warehouse: A very large database system for storing, retrieving and managing large amounts of any of data. Data warehouse software often includes sophisticated search techniques for fast searches, as well as advanced filtering.

DHCP: (Dynamic Host configuration Protocol) A protocol that provides a means to dynamically allocate IP addresses to computers on a local area network.

Digital Signatures: A coded message added to an electronic document or data by the sender which guarantees the identity of the sender and that the contents are those of the sender and have not been changed or corrupted.

Domain Name: Allows you to reference Internet sites without knowing the true numerical address.

E-Commerce: Conducting business communications and transactions by the use of computers and electronic communications. The buying and selling of products and services, and the transfer of funds through the use of electronic data interchange (EDI), electronic money exchange, web sites, online databases, computer networks, and point-of-sale (POS) computer systems.

EDMS: (Electronic Document Management System) A collection of enabling technologies which provide for the electronic capability to distribute, display, organize, and manage the flow of information among users and across organizations. An EDMS system is commonly comprised of 4 component technologies: document management, electronic imaging, automated workflow, and electronic forms. Most systems, however, begin with document management and imaging components.

E-Gov: (Electronic Government) The ability for government to provide access to services and information twenty-four hours a day, seven days a week, i.e. e-commerce for government.

ERP: (Enterprise Resource Planning) A multi-module software system that supports enterprise resource planning and management. An ERP system typically includes a relational database and applications for managing purchasing, inventory, personnel, customer service, financial planning, and other important aspects of the enterprise.

Ethernet: Developed by Xerox, Digital and Intel (IEEE 802.3), this is the most widely used LAN access method. Normally, all stations on a segment share the total bandwidth, which is 10Mbit/s (Ethernet), 100Mbit/s (Fast Ethernet) or 1000Mbit/s (Gigabit Ethernet). With switched Ethernet, each sender and receiver pair have the full bandwidth.

Firewall: An electronic boundary that prevents unauthorized users from gaining access to a computer network.

GIS: (Geographic Information Systems) A digital mapping system used for exploration, demographics, dispatching and tracking. The system allows for the capturing, storing, checking, integrating, manipulating, analyzing and displaying data related to positions on the Earth's surface. Typically, GIS is used for handling maps of one kind or another. These might be represented as several different layers where each layer holds data about a particular kind of feature (e.g. roads, utility lines). Each feature is linked to a position on the graphical image of a map.

Home Page: The first page of a web site. Also, the web site that automatically loads each time you launch your browser.

Host: The name of a specific machine within a larger domain.

HTML: (HyperText Markup Language) A collection of tags typically used in the development of web pages.

HTTP: (HyperText Transfer Protocol) A set of instructions for communication between a server and a web browser.

Hyperlink: A reference link in a web document that leads to another web site or another place within the same document. The hyperlink is usually displayed in some distinguishing way, e.g. a different color, font , style, or underlined. The hyperlink may also be a picture.

Internet: The global computer network, composed of thousands of WANs and LANs that uses TCP/IP to provide world-wide communications to homes, schools, businesses and governments. The web runs on the Internet.

IP: (Internet Protocol) The network protocol used to route information from its source to its destination over the internet.

IVR: (Interactive Voice Response) A telecommunications system that uses a prerecorded database of voice messages to present options to a user. User input is retrieved via key presses. These systems typically allow users to store, retrieve, and route messages, as well as interact with an underlying database server which may allow for automated transactions and data processing.

LAN: (Local Area Network) A network of computers confined within a small area, such as an office building.

LATA: (Local Access and Transport Area) The geographic areas defined by the Court of Appeal limiting the long distance services provided by the Regional Bell Operating Companies (RBOC). The RBOC's may not transport calls across a LATA line.

Link: Another name for a hyperlink.

Multimedia: A combination of media types on a single document, including: text, graphics, animation, audio and video.

Nameserver: A computer running a program that converts domain names into appropriate IP addresses and vice versa.

Network: A group of two or more computer systems linked together. There are many types of computer networks, including LANs and WANs.

ODIN: (Online Dakota Information Network) A web based library system which is maintained by the University of North Dakota that serves as an Internet gateway to North Dakota Higher Education, private, public, K-12, hospital, special, and state agency libraries and resources. (http://www.odin.nodak.edu/)

Relational Database: A database in the form of tables which have rows and columns to show the relationships between items, and in which information can be cross-referenced between two or more tables to generate a third table. A query language is used to search for data. If data is changed in one table, it will be changed in all related tables.

T1: A category of leased telephone line service, allowing transfer rates of 1.5 Mbps (megabytes per second) over the Internet. Too expensive for home users (around $2000 per month), but commonly found in business environments.

TCP/IP: (Transmission Control Protocol/Internet Protocol) This protocol is the foundation of the Internet, an agreed upon set of rules directing computers on how to exchange information with each other. Other Internet protocols, such as FTP and HTTP sit on top of TCP/IP.

Token Ring: Developed by IBM (IEEE 802.5), this is the second most widely used LAN access method (behind Ethernet). It uses a token ring access method and connects up to 255 nodes in a star topology at 4 or 16Mbit/s.

VPN: (Virtual Private Network) The use of encryption, authentication and access control technologies and services to provide a secure connection through an insecure network, typically the internet. It has the appearance and functionality of a dedicated private line over which encrypted data is transported.

Web Portal: A web site that serves as a "doorway" to available information, services, or products which aggregates and indexes the information to present it in a consistent and easy to use fashion.

Web Site: A single web page or a collection of related web pages accessed using a web browser.

WAN: (Wide Area Network) A geographically dispersed network formed by linking several computers or local area networks (LANs) together over long distances, usually using leased long-distance lines. WANs can connect systems across town, in different cities, or in different regions of the world.

WWW: (World Wide Web, or simply web) The global collection of web sites located on the Internet that operate using the HTTP protocol.

XML: (Extensible Markup Language) A metalanguage which describes web data and its structure (unlike HTML, which describes how data should be presented). XML allows web builders to create their own markup languages.