

### Section 3

## Technical Infrastructure

### Overview

State statute directs the NITC to undertake several steps to coordinate and improve the state's technical infrastructure. According to Sections 86-1501 through 86-1514, the NITC must accomplish the following tasks:

- Develop a statewide vision and strategic plan to guide investments in information technology;
- Improve the planning, budgeting, and management of state government's information resources;
- Support the development of a unified statewide telecommunications infrastructure that is scalable, reliable, and efficient; and
- Organize technology planning in new ways to aggregate demand, reduce costs, and create support networks.

The NITC uses four approaches to coordinate and develop the state's technical infrastructure. Through the work of the Technical Panel, the NITC is defining a **technical architecture**. The technical architecture guides decisions about hardware, software, and networks in order to achieve interoperability, data sharing, flexible systems, and control costs. Where necessary, the NITC adopts **standards and guidelines** pertaining to specific aspects of the technical architecture. The process for developing standards and guidelines emphasizes communication and broad participation. Pursuant to state statute, the NITC conducts **technical reviews** of selected projects. Finally, the NITC undertakes **special projects** to achieve its goals.

This section of the Statewide Technology Plan lays the foundation for all NITC-sponsored activity pertaining to the state's technical infrastructure. Detailed information about the state's technical architecture and standards and guidelines is available on the NITC web site at: <http://www.nitc.state.ne.us/standards/index.html>.

The NITC web site (<http://www.nitc.state.ne.us/>) also has more information about special projects that are underway.

# Technical Architecture

## Purpose and Goals

An “enterprise architecture framework” refers to a conceptual structure for guiding decisions on the exchange of information and utilization of shared information technology resources. The framework includes, but is not limited to networks, computer platforms, applications, and enterprise-specific data. The business case for developing this architecture rests on six goals for information systems:

- **Provide access to data in a useful format when and where it is needed;**
- **Insure accurate and consistent data;**
- **Share data across the organization;**
- **Improve ability to adapt to changing business needs;**
- **Provide security; and**
- **Contain costs.**

## Objectives

The objectives of this undertaking are to:

- Establish guidelines and standards for the use of information technology in the State of Nebraska, when standards are needed to support statewide activities, including but not limited to accessibility, communications networks, e-government, and security.;
- Assist communities of interest in developing standards that are necessary to integrate data and applications across jurisdictions;
- Develop guidelines that enhance information technology investment and purchasing activities; and

## General Principles

The Technical Panel and NITC shall observe the following principles when recommending and adopting standards and guidelines for a state enterprise architecture framework. The architecture should:

- Facilitate the strategic objectives of the Statewide Technology Plan;
- Support the use of information technology to improve efficiency and effectiveness of all sectors;
- Increase access to information and services for citizens, business, and government, and all sectors, while protecting privacy and security considerations;
- Enable affected entities to leverage existing technology infrastructure investment;
- Use advances in technology that are scalable, reliable and cost-effective;
- Enable affected entities to use information technology as a catalyst to re-engineer current practices and design better ways of conducting the business of each sector;
- Provide for identification of process and resource owners (responsible individuals); and
- Provide for identification or creation of clear lines of authority and responsibility for all processes and technical decisions.

Affected agencies should be allowed reasonable access to the process of developing standards and guidelines. Affected agencies should have a reasonable time to implement applicable standards and guidelines.

The NITC, in concert with affected entities, will weigh the benefits of a standard or guideline against the cost of implementation.

## **Development**

The Technical Panel of the NITC will undertake a periodic review of the current architecture. The review will identify problems as well as strengths. In cooperation with the Councils of the NITC, the Technical Panel will identify the important business drivers that will determine the adequacy of the architecture in the future. The Technical Panel may sponsor studies of specific components and issues pertaining to the architecture. Based on this

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information, the Technical Panel will develop a state enterprise architecture framework which:

- Categorizes the architecture into useful components;
- Defines the scope of each component;
- Establishes principles to guide the development of each component of the architecture.

The Technical Panel shall recommend technical standards and guidelines to assist implementation of the architecture. The Technical Panel shall recommend policies and strategies to support the transition from the current to the target architecture.

The architecture framework should reflect the unique requirements of different sectors of the state. Preparing the framework should reflect a collaborative effort. A state enterprise architecture framework should not impede the rapid deployment of appropriate technology or establish cumbersome regulations or bureaucracy.

Given the complexity, scope, and changing nature of technology at the statewide level, developing the state enterprise architecture framework must follow an incremental approach that focuses on functional groups with shared interests. The framework should address the goals of access, accuracy, adaptability, cost containment, data sharing and security.

## Defining the Scope of the Enterprise

Since information sharing is a fundamental purpose of enterprise architecture, the term “enterprise” should include all areas that need to share **substantial** amounts of information. (Steven Spewak, 1995) A scope that is too narrow will miss important details and fall short of achieving the goals of the enterprise architecture. A scope that is too broad will take too much time to develop and will become unmanageable.

To be successful, enterprise architecture must incorporate policy, control, implementation, and management functions. (NASCIO Enterprise Architecture Toolkit, v.1.0, 2001)

Defining the enterprise architecture is a significant challenge for the NITC, because the potential scope includes state agencies, local government, K-12 education, higher education, and even

other entities. This is far too broad to be successful, except for limited areas. In addition, the NITC can only set policy. Control, implementation, and management are other essential components of a complete governance model for enterprise architecture. These are outside the authority of the NITC.

Solving this dilemma requires a hybrid approach to enterprise architecture. The solution includes the following elements:

1. NITC guidelines should encourage enterprise architectures for organizational units, such as state government, local government entities, and higher educational institutions. The guidelines should recommend a common approach and templates, such as those under development by NASCIO. The enterprise architecture of each organizational unit should explicitly address data sharing requirements and interoperability with statewide systems.
2. The NITC should encourage communities of interest to develop standards and guidelines that will promote data sharing and insure interoperability. Examples of communities of interest include the Nebraska Geographic Information Systems Steering Committee, the Nebraska Criminal Justice Information Systems Advisory Committee, and distance education networks. The NITC Technical Panel should help organize, review and coordinate these efforts.
3. The NITC Technical Panel will develop elements of the enterprise architecture, including standards and guidelines, on topics that transcend organizational units or individual communities of interest. Security policies and procedures are an example. Accessibility requirements are another example.
4. The NITC Technical Panel will recommend procedures for evaluating major investments in the technical infrastructure. The procedures should address the business case, life cycle cost analysis, alternatives, compatibility with other elements of the technical architecture, and risk assessment.
5. The NITC should provide a clearinghouse to document the technical architecture, including standards and guidelines.

# Process for preparing, reviewing, and updating standards and guidelines

## Authority

"The Commission shall: ... adopt minimum technical standards, guidelines, and architectures upon recommendation by the technical panel ..." Neb. Rev. Stat. Section 86-1506(6)

"... The technical panel may recommend technical standards and guidelines to be considered for adoption by the Commission." Neb Rev. Stat. Section 86-1511(2)

## Definitions

**Standard:** A degree or level of requirement that all jurisdictions should use, which would be enforceable by duly authorized entities. With any standard, there will be circumstances that merit exceptions.

**Guideline:** A statement of general policy or procedure by which to determine a course of action, subject to reasonable situations. Adherence is voluntary.

## Overview

Adhering to a sound set of standards for information technology can reduce costs and improve service delivery. Statute requires the Technical Panel to recommend standards and guidelines to the NITC for adoption. Enforcement of NITC standards and guidelines depends entirely upon cooperation of other entities with such authority.

These procedures permit both the NITC Technical Panel and users to propose standards and guidelines. By statute, the Technical Panel may recommend technical standards and guidelines to the NITC. In addition, any state agency, political subdivision, educational institution, or other information systems user in Nebraska may propose standards or guidelines for information technology. The technical panel will review the proposal and then invite comments from other information technology coordinating bodies, other government agencies, and the public.

## Principles

The Technical Panel and NITC shall observe the following principles when recommending and adopting standards and guidelines:

- Data are shared, consistent with security and confidentiality requirements.
- The infrastructure uses advances in technology that are scalable, reliable and cost-effective.
- Design and development of the statewide infrastructure are collaborative.
- The telecommunications infrastructure is based upon open-systems concepts to assure universal access and interoperability.
- Affected entities should have a reasonable time to implement a standard or guideline.
- The NITC should weigh the benefits of a standard or guideline against the cost of implementation.

## Format

The format of a standard or guideline shall include the sections listed below. Eventually, a form will be available for this purpose to facilitate the process of proposing and reviewing standards and guidelines.

1. Title and number
2. Date of first adoption
3. Date of last revision
4. Date of scheduled review
5. Status (draft, pending, active, inactive, standard or guideline)
6. Applicability (who it pertains to)
7. Category
8. Description of impact
9. Related Standards
10. Rationale and justification
11. Primary NITC principle addressed

## Process

The Technical Panel will solicit initial standards and guidelines from NITC Councils, other coordinating entities, and state and local agencies. The invitation will include a timeframe for receiving notices and making recommendations to the NITC. After the initial round of standards and guidelines, a sponsor may propose a standard or guideline to the Technical Panel for consideration. Proposals should be e-mailed. Sponsors should describe the standard, its applicability, impact, related standards, and provide other justification.

The Technical Panel will review the proposed standard or guideline and determine whether to proceed with further consideration. The Technical Panel may request further information from the sponsor or make changes to the proposal. The Technical Panel will announce and post the proposed guidance on the World Wide Web for review by affected entities for at least 30 days. Comments should be submitted by e-mail to [info@cio.state.ne.us](mailto:info@cio.state.ne.us). The Technical Panel may appoint special review committees to examine the proposal and make recommendations.

The Technical Panel will review the proposal and any comments received. The review will include an evaluation of the proposal's alignment with the NITC Statewide Technology Plan.

The Technical Panel may make further changes or recommend the proposal to the NITC for adoption. If changes are substantive, in nature, the Technical Panel shall provide another 30-day opportunity for comment.

The NITC may adopt, change, or reject any proposed standard or guideline.



## Technical Review Process

Section 86-1511 (2) requires the Technical Panel to "... review any technology project or request for additional funding recommended to the Nebraska Information Technology Commission...." Sections 86-1512 and 86-1513 require the Technical Panel to review requests for funds from the Community Technology Fund and the Government Technology Collaboration Fund. Section 9-812 requires the Technical Panel to review funding requests for educational technology assistance grants (lottery funds). In addition, the Technical Panel will conduct special reviews on request by project sponsors, the Governor, the Legislature, or other entities exercising oversight responsibilities.

The review process will evaluate and rank the adequacy of each component of the project plan. The Technical Panel will identify issues pertaining to implementation, technical impact, and risk assessment. The Technical Panel will look for duplication, opportunities for collaboration and compatibility with other systems.

It is neither practical nor necessary for the Technical Panel to review all information technology projects that an agency or other jurisdiction undertakes. One purpose of the review process is to assist the budget process in reviewing and ranking appropriation requests. Statute requires the Technical Panel to review requests for "new or additional funding." ~~Given the undefined meaning of this term, the NITC and Technical Panel will rely on the State Budget Division and Legislative Fiscal Office for assistance in determining what information technology projects represent "additional funding."~~ The NITC has issued instructions to guide agencies on what constitutes "new or additional funding." The guidance document is available on the NITC web site at: <http://www.nitc.state.ne.us/forms/>.

Another purpose of the review process is to promote consistency with the Statewide Technology Plan. Other than reviews mandated by statute, the NITC and Technical Panel must rely on agencies and other jurisdictions to identify and submit for review any projects that would have either a significant positive or negative impact on the Statewide Technology Plan.

The review process can also provide technical assistance and advice to project sponsors. Agencies and other jurisdictions may submit any project to the Technical Panel for review.

## Special Projects

The NITC has sponsored two planning efforts that target the need for a “unified statewide telecommunications infrastructure that is scalable, reliable and efficient.” In 1998, the NITC recommended a study that would document the current and future telecommunications demand of public entities. The “Telecommunications Infrastructure Needs Assessment” (TINA) got underway in August 1999. It included interviews with almost 250 individuals, an inventory that was sent to over 400 entities, and 3 focus groups with 125 participants. The TINA study identified several objectives, including:

- Providing an information infrastructure to support governmental educational and economic development initiatives throughout the state;
- Leveraging the State’s purchasing power to create economic development incentives; and
- Reducing telecommunications costs of state government;

The TINA study resulted in an RFP in August 2001, which sought a qualified entity to assume the position of “prime contractor” for implementation of a statewide telecommunications network. On October 19, 2001, the State rejected all proposals because they failed to meet key objectives. In February 2002, the NITC passed a resolution, which endorsed conducting a pilot project as a proof of concept. Further information about the TINA study and related activities is available at:

<http://www.doc.state.ne.us/netcom/index.html>.

Another special project is the Nebraska Network Feasibility Study. At its February 2002 meeting, the NITC formed a workgroup to evaluate the feasibility of developing a digital network and related support functions that would serve education, communities, and state government. The workgroup will present a final report and recommendations to the NITC by September 2002. Further information is available at:

<http://www.nitc.state.ne.us/nitc/network/>.