

**BEFORE THE NEBRASKA PUBLIC SERVICE COMMISSION**

In the Matter of the Nebraska Public Service Commission, on its own motion, seeking to investigate the current status of distance learning in Nebraska. ) Application No. C-2874 / PI-71 ) ) )

**COMMENTS OF THE TECHNICAL PANEL OF THE NEBRASKA INFORMATION TECHNOLOGY COMMISSION**

On February 4, 2003, the Nebraska Public Service Commission initiated this investigation into the current status of distance learning in Nebraska. Although the investigation is in response to complaints about delays in providing distance learning at several schools, the order raises broader questions about whether the infrastructure for distance learning is adequate, what technology should be used, issues pertaining to interconnecting networks, and future needs. The Technical Panel of the Nebraska Information Technology Commission (NITC) is working on many of these same issues.

The Legislature created the NITC for the purpose of providing “a statewide vision and strategy ... to ensure coordinated development of the telecommunications infrastructure necessary for Nebraska to keep pace worldwide...” (Section 86-512). State statute also directs the NITC to “coordinate the state’s investment in information technology...” (Section 86-513), and “to adopt minimum technical standards, guidelines, and architectures...” (Section 86-516). The Technical Panel of the NITC is responsible for recommending technical standards and guidelines and for reviewing selected technology projects.

Several activities of the NITC and the Technical Panel are directly relevant to the current investigation of the PSC.

**Video and Audio Standards for Distance Learning**

On January 8, 2002, the NITC adopted the “Video and Audio Compression Standard for Synchronous Distance Learning and Video Conferencing.” A copy of this standard and related information is available at: <http://www.nitc.state.ne.us/standards/index.html>. This standard was the product of a yearlong effort by a broad-based group to evaluate different technologies. The Technical Panel followed an open process in developing the standards and held a public hearing on the proposed standard prior to recommending the standard to the NITC. Criteria for selecting a standard included cost, bandwidth, connectivity, and compatibility. The purpose of the standard is to “establish video and

audio standards that will enable all existing and future synchronous distance learning and video conferencing facilities in Nebraska to achieve interoperability and an acceptable quality of service.”

Based on the recommendation of the Technical Panel, the NITC adopted MPEG-2 and H.263 video with G.722 audio as the standards in Nebraska. MPEG-2 is for applications that require high bandwidth video or “full motion video” with expected data rates of 1.5 Mbps or higher. H.263 video is for low data rate video applications with expected data rates less than 1.5 Mbps. The NITC also addressed the problem of implementation. The adopted standard tries to avoid the need for many gateways in the system by recommending that each distance-learning consortium should upgrade as a group when their current contracts for distance learning services expire. “All new sites that install interactive distance learning facilities prior to that date should adopt the current technology used by the consortium they will join.” This clause has the effect of “grandfathering” JPEG technology until expiration of existing contracts. Availability of JPEG technology was discussed during development of this policy. Information from several sources indicated that JPEG equipment could be purchased in the after-sales market as other states migrated to newer technologies.

The Technical Panel plans to conduct a review of the video and audio standard prior to January 2004.

### **Nebraska Network Feasibility Study and Recommendations**

The NITC established the Nebraska Network Work Group in February 2002 “to evaluate the feasibility of the development of a digital network and related support functions to serve education, communities, and state government that could be accomplished through a statewide consortium.” Membership on the work group included representatives of higher education, K-12 schools, Education Service Units (ESUs), telehealth providers, libraries, local government, state government and the NITC Technical Panel. Agendas, minutes, and supporting material are available on the website for the work group: <http://www.nitc.state.ne.us/nitc/network/>.

The workgroup studied the existing distance learning networks and other video networks. As a general observation, the workgroup noted the “lack of interconnectivity and interoperability” of video networks. Lack of market power when negotiating services was also identified as a problem.

On September 16, 2002, the NITC adopted the final report of the Nebraska Network Workgroup, including the following recommendation:

“12. The Technical Panel, as a continued extension of its video standards activity, should establish an implementation work group to determine how to provide a Nebraska Statewide Synchronous Video Network. The network should incorporate the facilities of K-12 interactive distance learning consortia, higher education, telehealth, National Guard video network, and the Nebraska

Video Conferencing Network (NVCN). The work group should include representation of the Community Council, Education Council, State Government Council and affected entities. It should define the technical requirements for interconnecting all synchronous video networks and meeting the scheduling needs of different participants. Issues to be addressed should include business case, scheduling, traffic prioritization, security, quality assurance, cost sharing, and existing contractual arrangements of regional networks. Specific steps might include:

- a. Create a working group to continue the activities of the Video Standards Work Group to prepare an implementation plan for adherence to the new video/audio standards;
- b. Conduct informative and working sessions to determine the needs, issues, and participants regarding interoperability within and outside the state;
- c. Encourage participants to improve educational opportunities in the state via continued evolving video distance education;
- d. Identify a “core sponsor” for video distance education in the state that will be the focal point to coordinate all of the activities associated with enhancement of services and interrelationships that will be critical for continued success;
- e. Evaluate options for providing support services.”

At its November 2002 meeting, the Technical Panel adopted a charter for the Statewide Video Synchronous Video Work Group. Members have been identified and the workgroup will begin meeting soon.

On December 16 and 18, 2002 and January 30 and 31, 2003, distance-learning providers from across the State hosted technology demonstrations that showed the attributes of the two video standards, H.263 and MPEG-2. The demonstrations were well attended by users from the K-12 and Higher Education communities. Perhaps the most striking comment from the audience at the H.263 demonstrations was their increased confidence that the low bandwidth video standard may be suitable for normal distance learning exchange. This would represent a change in perspectives compared to the testing and findings of the Video Standards Work Group in January 2002. Due to the development of new CODECs by classroom integration companies, the H.263 video standard may be a scalable retrofit or upgrade for the outmoded JPEG video installations.

The Statewide Synchronous Video Work Group plans to develop recommendations over the next 12-18 months to overcome the technical and non-technical challenges to developing a statewide synchronous video network to serve both educational and non-educational entities. Issues include:

- Upgrade plans for existing distance learning and other synchronous video networks;
- Interconnectivity;
- Operational support for a shared network, including scheduling;
- Technical options and support from telecommunications providers.

Staff of the NITC is also involved in working with representatives of several telehealth initiatives to achieve a statewide interoperable telehealth system.

## **Conclusion**

The NITC has a strong interest and a history of involvement in the issue of statewide synchronous video networks.

Although the preponderance of interest in synchronous video networks is for distance learning applications, the need for a statewide system transcends the education sector. Many aspects of telehealth involve the same technology as distance learning systems. So do videoconferencing and training needs of state agencies. Homeland security officials could use a statewide synchronous video network to connect with a wide range of individuals for training and other purposes. Achieving maximum value of the taxpayer's investment in these systems will require interoperability, with the ability to connect one or more sites to any combination of other sites in the state or outside Nebraska.

Accomplishing the goal of a statewide, interoperable synchronous video system will require collaboration of participants and telecommunications providers.

Dated this \_\_\_\_ day of March 2003.

TECHNICAL PANEL  
NEBRASKA INFORMATION  
TECHNOLOGY COMMISSION

By: \_\_\_\_\_

Walter Weir, Chair  
(Address)