

Approved: March 30, 2000 *Carl Dean Holmes*

Date

MINUTES OF THE HOUSE COMMITTEE ON UTILITIES.

The meeting was called to order by Vice-Chairman Tom Sloan at 9:09 a.m. on March 13, 2000 in Room 231-N of the Capitol.

All members were present except: Rep. Carl Holmes
 Rep. Gene O'Brien

Committee staff present: Lynne Holt, Legislative Research Department
 Mary Torrence, Revisor of Statutes
 Jo Cook, Committee Secretary

Conferees appearing before the committee: Richard Veach, Pioneer Communications
 Don Hieman, DISC
 Greg Rasmussen, Department of Education
 Doug Heacock, KANREN
 Sal Tayani, Department of Education

Others attending: See Attached Guest List

Vice-Chairman Sloan drew the committee's attention to items distributed. Copies of Doug Heacock's, Executive Director of KANREN, March 1 presentation (Attachment 1) and a letter from Kendall Micksell from Southern Kansas Telephone Company regarding HB 2743 (Attachment 2) were distributed.

Sub HB 2591 - State education technology network, establishment

Richard Veach, General Manager of Pioneer Communications, testified in support of **Sub HB 2591** (Attachment 3). Mr. Veach outlined the positions and experiences of rural telephone companies who already provide high speed Internet access to schools and libraries in Kansas. He also recommended several amendments that would address their concerns.

Don Hieman, Director of the Division of Information Systems and Communications (DISC), testified in support of **Sub HB 2591** (Attachment 4). Mr. Hieman provided information on DISC and KAN-WIN, both of which are part of the proposed backbone of KAN-ED.

Mr. Greg Rasmussen, Kansas Department of Education, testified as a proponent of **Sub HB 2591** (Attachment 5, pages 1 thru 3). Mr. Rasmussen explained the vision, responsibility and overview of the KAN-ED program.

Doug Heacock, Executive Director of KAN-REN, provided testimony in support of **Sub HB 2591** (Attachment 5, pages 4 thru 6a). Mr. Heacock outlined the goals and benefits of the KAN-ED program.

Mr. Sal Tayani, Chief Information Officer for the Kansas Department of Education, testified in support of **Sub HB 2591** (Attachment 5, pages 6b thru 7). Mr. Tayani explained the support role of the Department of Education and stated that time was of the essence in passing the KAN-ED bill.

The conferees responded to questions from Rep. McClure, Rep. Myers, Rep. Kuether, Rep. Morrison, Rep. Vining, Rep. Krehbiel, Rep. Dahl, and Rep. Sloan.

The hearing on **Sub HB 2591** was recessed until Tuesday, March 14.

Meeting adjourned at 10:54 a.m.

Next meeting will be Tuesday, March 14, 2000 at 9:00 a.m.

HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: March 13, 2000

NAME	REPRESENTING
Stan Parsons	Smoed & Assoc.
John Federico	KCTA
William Stettin	USA & KAESP
Don Hermin	CITO Executive Branch
Jerry Niebaum	Bd. of Regents Universities
Doug Heacock	KANREN
Greg Rasmussen	KSDT
Sal Tayan	KSDT
TOM DAY	KCC
DVANE JOHNSON	STATE LIBRARY
Dialilyn Hessel	Division of Budget
Doug Lawrence	SW Bell
Rob Hodges	KTIA
Guy McDonald	KCC - staff
Toni Harrell	KASB
Brilla Stott	USA
Craig Drant	KNEA
Mark	public
John Pinegar	SITA
RICHARD VEACH	PIONEER COMMUNICATIONS

HOUSE UTILITIES COMMITTEE GUEST LIST

DATE: MARCH 13, 2000

NAME	REPRESENTING
KENDALL MIKESELL	SOUTHERN KANSAS TELEPHONE
Mike Murray	Sprint
Mike Reedt	ATT
Doug Lawrence	SWB
Mary Sullivan	MISC

Kan-Ed Network Design Considerations
House Utilities Committee
March 1, 2000

Doug Heacock, Executive Director, Kansas Research and Education
Network

Introduction

The technical design of a network on the scale of what Kan-Ed will become is a matter of great importance. Large amounts of money will be spent on the technology used to implement this network, and for this reason alone, the selection of the specific technologies is extremely important.

But cost is not the only important factor. In order to meet the goals of the Kan-Ed proposal, the network we put into service on behalf of schools and libraries must be:

- Robust: capable of functioning properly under adverse conditions, which include high traffic loads, complex routing environments, carrier networks of variable reliability and stability, etc.
- Scalable: expandable to whatever size is required to meet the needs of the connected community; by "size" we mean "capacity," or "speed," as well as the sheer number of connections. This involves not only having fast enough data circuits in the backbone, but also having fast enough equipment on the ends of those circuits.
- Reliable: available for use virtually all of the time, except at scheduled maintenance downtimes. Unplanned outages are minimized.
- Manageable: and specifically, *remotely* manageable. We must be able to do certain kinds of configuration and diagnostic tasks remotely (it's a big state). Included in this is the capability of network monitoring, around the clock. We must be able to determine the "health" of all routers on the network at all times.

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ATTACHMENT 1

What we have...

There are essentially two main large-scale network resources in the state at this time:

KanWIN (Kansas Wide-Area Information Network), which is the network that serves state agencies; and

KANREN (Kansas Research and Education Network), which serves colleges, universities, school districts, libraries, and other non-profit organizations.

Both of these entities operate state-wide backbone networks with similar capabilities. Both networks are designed to use the Internet protocols for data communication, and both employ the use of "core" routers located in certain geographical areas of the state as major points of connectivity to their respective backbones. Both networks have connections to Internet Service Providers and thus permit users connected to their backbones to have access to the commercial Internet. KANREN and KanWIN are also connected to one another, via a single T1 (1.5 Mbps) connection that is provided by the state to allow the Regents universities to have a more direct path for transporting human resources data to state offices. The routing on that connection is not complex, and neither KANREN nor KanWIN can use the other's external Internet connections, under the current configuration—it is a single-purpose connection at this time.

KANREN also has some additional capability by virtue of its relationships with the major Regents universities. The KANREN network is connected to the Great Plains Network for Earth Systems Science (GPN), which is a multi-state regional network that supplies inter-state connectivity, commercial Internet access, and access to Internet 2, a research-oriented, high-performance network under the oversight of the University Corporation for Advanced Internet Development (UCAID). Both the University of Kansas (including the KU Medical Center in Kansas City) and Kansas State University are members of the Internet 2 consortium.

The KANREN/GPN/Internet 2 connection is important to Kan-Ed, because under recent UCAID policy revisions, Internet 2 access can be granted to any educational institution, if authorized by an existing UCAID member university, provided there is a connection of some type to that institution.

The Internet 2 aspect of the Kan-Ed picture is an exciting and potentially ground-breaking possibility, but it also introduces certain

complexities into the routing environment that must be handled properly. For this reason (among others), it is extremely important that the Kan-Ed backbone architecture be designed with great care. UCAID is fairly particular about who uses Internet 2, and this requires that special measures be taken to insure that commercial Internet traffic and Internet 2 traffic be kept separate.

...and what we want

At this point in the development of network technology, and for the foreseeable future, there is essentially one backbone technology that will adequately serve the requirements noted above, but it is not a technology that locks us into specific hardware, software, or bandwidth solutions. That technology is ATM (Asynchronous Transfer Mode). The use of ATM as the primary backbone network technology meets all of the criteria noted above, but does not place any undue restrictions on the selection of equipment, the choice of bandwidth providers, or the choice of Internet access providers.

In fact, ATM is well-defined by industry standards, and opens the door to a variety of solutions from a variety of vendors. ATM is easily scalable—lower-bandwidth backbone circuits may be replaced with higher-bandwidth circuits, and the various ATM switches can be upgraded and configured as necessary to accommodate higher speeds.

ATM is also in use on both the KANREN backbone network and in the Great Plains Network.

What we don't want

We would encourage the various legislative bodies who have a stake in all of this to consider one very important thing: it would be a mistake to make a particular technology a matter of law in the process of creating Kan-Ed. Our experience in designing the KANREN network is useful here:

When the network design team, primarily at KU, began talking about KANREN in 1992, there were certain limitations of cost and technology that made high-speed connections for member sites nearly impossible. At the time, our only real choice for connecting sites in all parts of the state was dedicated data circuits, which were expensive, and distance-sensitive in cost. As a result, the maximum

connection speed to the KANREN backbone network for all but the very largest institutions was going to be 9600 bits per second. We did the design work and made the necessary financial calculations, based on the available technology, and that was the best we could do. (It sounds almost silly by today's standards.)

While we were still working on the design, Southwestern Bell frame relay technology was introduced into Kansas (it had been unavailable here before), promising much higher speed connectivity to the local sites for the same cost. Since our design team had the flexibility to respond to changes in available technology, we began investigating this new offering, and made the decision to include frame relay in our plans. It turned out to be the right decision.

Had that flexibility not been there, we would not have had the freedom to accommodate the new technology, and consequently our member institutions would have suffered for a period of time with inferior connectivity at a premium cost.

The Kan-Ed design process needs to have that same kind of flexibility. The industry upon which Kan-Ed will rely changes very rapidly. It is important that the Kan-Ed network engineers from KANREN and DISC be free to make changes in technological direction when it is clearly the right thing to do, and where it is in keeping with our overall design goals.

How this process might evolve

Initially, we anticipate that Kan-Ed will be born (in a technological sense) when KANREN and KanWIN are connected via a high-speed link, and when the necessary routing configuration is completed to allow proper routing of traffic among KANREN, KanWIN, GPN, the commercial Internet, and Internet 2. Existing backbone links in both KANREN and KanWIN will be inadequate as we begin connecting districts and libraries to the backbone core sites, and will have to be upgraded. We anticipate using frame relay for the individual district and library connections, simply because it is the only suitable technology that is available in every part of the state, and because it is still a viable technology. As other options become more widely available (including xDSL), we would anticipate utilizing those technologies, where it makes sense, and where the cost savings would be significant.

There are several possibilities for acquiring backbone bandwidth, any of which would be technologically feasible, but some

of which may be more reliable and/or less expensive than others. One scenario involves the use of bandwidth obtained in the KDOT fiber installation. Another involves simply purchasing high-speed circuits from any of several national providers.

Early in the process, KANREN and DISC engineers will need to discuss in great detail the routing environments in their respective networks, and come to some agreement concerning the use of advanced routing protocols to insure that Internet 2 routes are not "leaked" to the commercial Internet (this is an important proviso of KANREN's relationship with GPN and Internet 2). In addition, a plan for backbone bandwidth expansion and implementation will have to be developed, because neither the KanWIN backbone nor the KANREN backbone is capable of handling all of the Internet traffic that will be generated when the district and library connections are in place.

After the first iterations of the backbone architecture design, we would anticipate a bid process for various parts of the backbone, possibly including a variety of vendor presentations for the engineering team. The final stages of the design and the implementation would naturally have to be conducted in close cooperation with any vendors who were selected in the bid process.

Management of a network can make it or break it, so to speak, and early on in the process, we will have to make some decisions in this area. Existing DISC network operations center (NOC) facilities will have to be evaluated to determine whether they are adequate to take on more than 600 additional sites. Monitoring a network of this size is no small task, and whether existing monitoring tools are capable of operating at this scale will have to be determined. If not, new solutions must be explored. This is not an insurmountable task, but

Once the backbone architecture is agreed upon and vendors have been selected, an implementation plan (or project management plan) would need to be generated. A survey of all school districts and libraries would be conducted to determine which districts are truly ready for a connection, and which are not (for a variety of reasons, including inadequate local- or wide-area network infrastructure). We would anticipate that backbone modifications and upgrades would come first, followed by a tiered schedule of individual district and library connections. It would seem reasonable to project that the entire process could take place within 12 months.



To: Chairman Carl Holmes and Members House Utilities Committee

Re: House Bill 2743

Mr. Chairman and members of the Committee:

The rural telephone companies of Kansas wish to express their continuing support for House Bill 2743, providing for the statewide availability of higher speed data communications. We support the policy of comparable availability of services at comparable prices in all areas of Kansas, and we agree that higher capacity telecommunications is of central importance to the continuing vitality of rural communities.

Just as the deployment of electricity and basic telephone service once spurred economic opportunity and enhanced the quality of life, the availability of advanced telecommunications will profoundly improve the future in rural Kansas. It is for this reason that rural telephone companies have taken the lead in providing the services rural Kansans need and deserve.

It is not the goal of rural telephone companies to secure an unreasonable advantage through this proposed legislation. It is our hope only to be able to provide a needed service to rural customers where other providers are unable or unwilling to do so.

Although other meetings prevented our appearance and testimony at the Committee's hearing on the bill, we ask that you accept for the record the accompanying testimony of Greg Reed of Wheat State Telephone as presented to the Select Committee on Information Management in support of HB 2743. Amendments to the bill by that committee, we believe, are consistent with the sound public policy expressed by the original proposal.

Kendall S. Mikesell
President, Southern Kansas Telephone Company, Inc.
Chairman, Rural Telephone Company State Affairs Committee

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ATTACHMENT 2

SOUTHERN KANSAS TELEPHONE CO., INC.

Inclusion of DSL in Enhanced Universal Service

By Greg Reed

On February 8, 2000

Before Select Committee on Information Management

I am Greg Reed, President of Wheat State Telephone, Inc. (Wheat State). Wheat State has six exchanges and serves approximately 2300 customers in a 722 square mile area of south central Kansas. The Wheat State service area covers portions of Cowley, Butler, Lyon, Chase and Greenwood counties. I am testifying today on behalf of the rural independent telephone companies of Kansas.

The independent telephone companies of Kansas support the purpose and intent of HB 2743. A number of these companies have already begun to provide DSL service. Wheat State has been in the planning stages and will begin construction this spring to bring DSL services to our customers. Just as Kansas has long recognized the importance of affordable basic telephone service, we believe there should be clear public policy support for affordable advanced services. The independent telephone companies of Kansas have been able to set the standard for quality of modern service, in large measure because legislative and regulatory policy has allowed them to do so. So long as cost recovery is assured, independent companies can apply their experience and dedication to serving their customers with quality advanced services.

Most of the independent telephone companies are similar to Wheat State in the fact that they serve mostly rural areas of the state and usually cover a relatively large geographical area considering the number of customers served. With the help of high-cost funding in the past, the independent telephone companies have provided high quality basic services (dial-tone) for their customers and are eager to provide high quality advanced (broadband) services in the future. Without the high-cost support mechanisms, many rural Kansans could not be provided affordable basic services, and advanced services would be much more difficult to deploy. Just as dial tone was important to the progress in the past generation's economy, broadband services are necessary for the economic progress in the future. In today's rural environment reasonably-priced, high-capacity access to the "e-business" and "dot-com world" is not an option, it's a necessity.

TESTIMONY OF RICHARD VEACH OF PIONEER COMMUNICATIONS
BEFORE THE KANSAS HOUSE UTILITIES COMMITTEE
MARCH 13, 2000

Good morning Mr. Chairman and members of the committee. I'm Richard Veach General Manager of Pioneer Communications, which is headquartered in Ulysses. Pioneer Communications provides local service to 17,000 telephone access lines in all or parts of nine counties in southwest Kansas. Our company also furnishes Internet service to more than 6,300 users and has 8,400 cable television customers. I am speaking on behalf of the thirty-six telephone companies referred to in the Kansas Telecommunications Act of 1996 as "rural telephone companies". The definition of a rural telephone company in the Kansas Act is a telephone local exchange carrier with fewer than 20,000 access lines. This is every telephone company in the state with the exceptions of Sprint and Southwestern Bell.

I am here today to visit with you about Substitute for House Bill No. 2591. Let me unequivocally state at the outset that we are philosophically in favor of the concept of providing high-speed Internet access to schools and libraries in Kansas. It has come to our attention that some have been attempting to paint us as opponents of this legislation. This is not true. No entity in the state has done more than the rural companies to bring broadband services to schools and others. A cursory survey that I performed on Friday afternoon of just six rural companies yielded the following information:

The Cunningham Telephone Company in Glen Elder is presently working to have high-speed Internet access installed by the beginning of the fall term in all the school districts that it serves. They will be offering this service at no charge to the schools.

Rural Telephone Service Company that is headquartered in Lenora has, for a number of years, provided interactive video to twelve schools in northwest Kansas. In addition to this, they are in the process of deploying digital subscriber line service throughout their service area. While this bill doesn't pertain to hospitals, it should be noted that Rural is providing ISDN services for the hospitals in WaKeeney, Quinter and Hill City and is working toward the same kind of arrangement for Phillips County. These hospitals are connected with the Hays Regional Medical Center, which in turn is connected with the KU Med Center.

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ATTACHMENT 3

The Southern Kansas Telephone Company in Clearwater is providing fast Internet connections and, in some cases, wide area network connectivity to the following school districts:

- USD 264 in Clearwater
- USD 462 in Burden
- USD 471 in Dexter
- USD 283 in Longton
- USD 492 in Rosalia
- Clearwater Public Library
- Grenola Public Library

My company, Pioneer Communications, installed the first interactive educational video system in the state. Today, in partnership with three other telephone companies, we are providing ITV video services to two community colleges, Fort Hays State University, one special education cooperative, an educational service center and thirteen school districts.

In 1995, we began providing fast Internet service to schools in our service area for a nominal fee. We are presently providing T-1 speed Internet access to the following schools and libraries:

- USD 216 in Deerfield
- USD 210 in Hugoton
- USD 214 in Lakin
- Lakin Public Library
- USD 209 in Moscow
- USD 494 in Syracuse
- USD 217 in Rolla
- USD 210 in Ulysses
- Ulysses Public Library

In addition, we provide Internet service to the Holcomb School District and the Garden City High School under very favorable terms. Both of these schools are outside our telephone service area.

Our neighbors with United Telcom in Dodge City are providing dedicated Internet access to the schools in Hanston, Ingalls, Montezuma and Spearville. They also partner with us in providing ITV to the schools in their service area.

Our friends at Craw-Kan Telephone Cooperative in southeast Kansas have installed high-speed Internet connections for the following schools and libraries:

- Arma
- Columbus
- Cherokee

Uniontown
Girard
Girard Library
Riverton
Galena
Baxter
Greenbush
Pleasanton

They also provide a high-speed connection for the Girard hospital.

Given sufficient time, I could poll the other thirty rural companies in Kansas and this list of schools, libraries and hospitals would grow much larger. The purpose of this short review of high-speed services presently being offered is not to "blow our own horn" but to establish our credentials. We are not some self-aggrandizing "Johnny come lately" who is attempting to jump on the broadband-to-schools bandwagon. We were the original teamsters of this bandwagon who pioneered the provision of these services for rural Kansas for no other reason than it was the right thing to do for our communities.

This is something that we did of our own volition without guidance or direction from any legislative body or regulatory agency. Any attempt to characterize us as obstructionists where this bill is concerned is just plain wrong. The services that we provide today would be complimentary to the services that KAN-ED would provide.

We do not deny that we have some concerns about this bill. We also have suggestions about how to improve the bill. Please do not mistake honest disagreement over how to attain this bill's objectives with obstruction. Nothing could be further from the truth.

Our concerns are few and could be addressed with the addition and deletion of a few lines of text from the original House Bill 2591.

First, it would seem reasonable that the bill contain a simple statement that the State of Kansas will not, through KAN-ED, compete with private enterprise. DISC has said that this is not their intent so let's just say that in the bill.

Second, some of the rural companies have agreements in place for the provision of these services. In my company's case, these are "handshake" kinds of arrangements but some rural companies have actual agreements and it isn't right that they should be superseded. Also, KAN-ED should not construct telecommunications facilities that duplicate those already in place. DISC has said that this is not their intent so let's just say that in the bill.

Third, having KAN-ED provide a discounted long-distance service is unnecessary. Mechanisms currently exist for schools to aggregate long distance if they wish without depriving the local exchange carrier of the 1+ long distance traffic. We shouldn't allow KAN-ED to contribute to the killing of the "goose that lays the golden egg", the local telecommunications company that has been providing discounted or free Internet access to schools and libraries.

Fourth, we believe that KAN-ED should be required to submit a public report periodically that identifies the telecommunications facilities that it is utilizing and for which Kansans are paying. This would provide legislative oversight and a system of checks and balances.

I ask that you consider crafting the bill in such a manner as to address our concerns. Our suggestions in no way violate the spirit and objectives of the bill. I thank you for affording me the opportunity to talk with you today.

House Utilities Committee

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ATTACHMENT 4

**Tour of Division of Information
Systems and Communications**

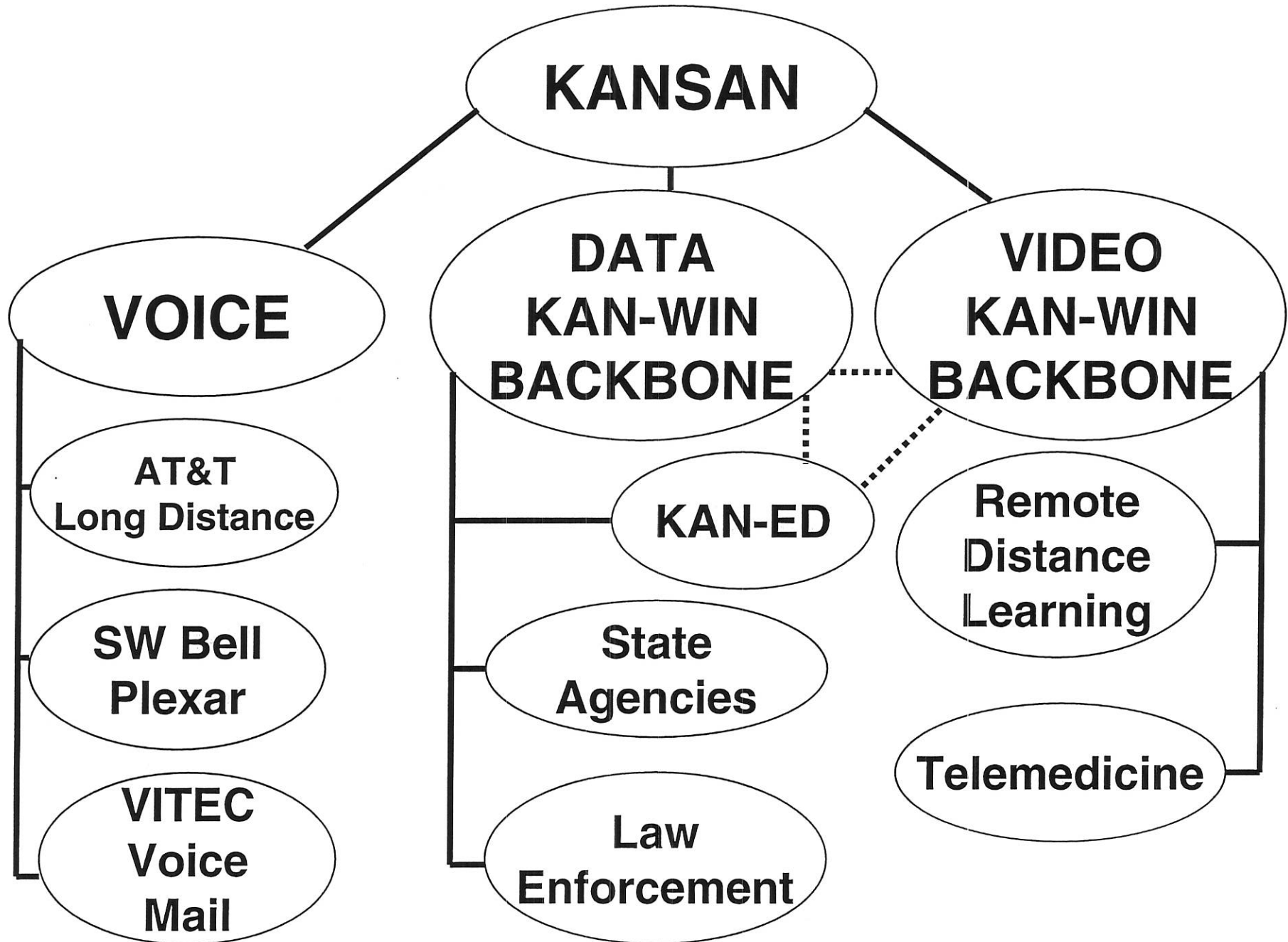
March 10, 2000

**Landon State Office Building
and**

Utility Committee Briefing

March 13, 2000

DISC Bids Its Network Services



DISC Bids Its Network Services

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Voice Contracts

AT&T Software Defined Network (this is a public network leased by DISC from bids; next bid is Jan. 2001.

SW Bell Local Phone Services (this was bid and awarded for Topeka based agencies in Feb. 2000.

VITEC Voice Mail server operated by DISC, under maintenance with VITEC.

Data Connect

AT&T Public Backbone (same used for data)

SW Bell Frame Relay legs based on tariffs.

ILEC's Circuits based on tariffs.

Video Connect

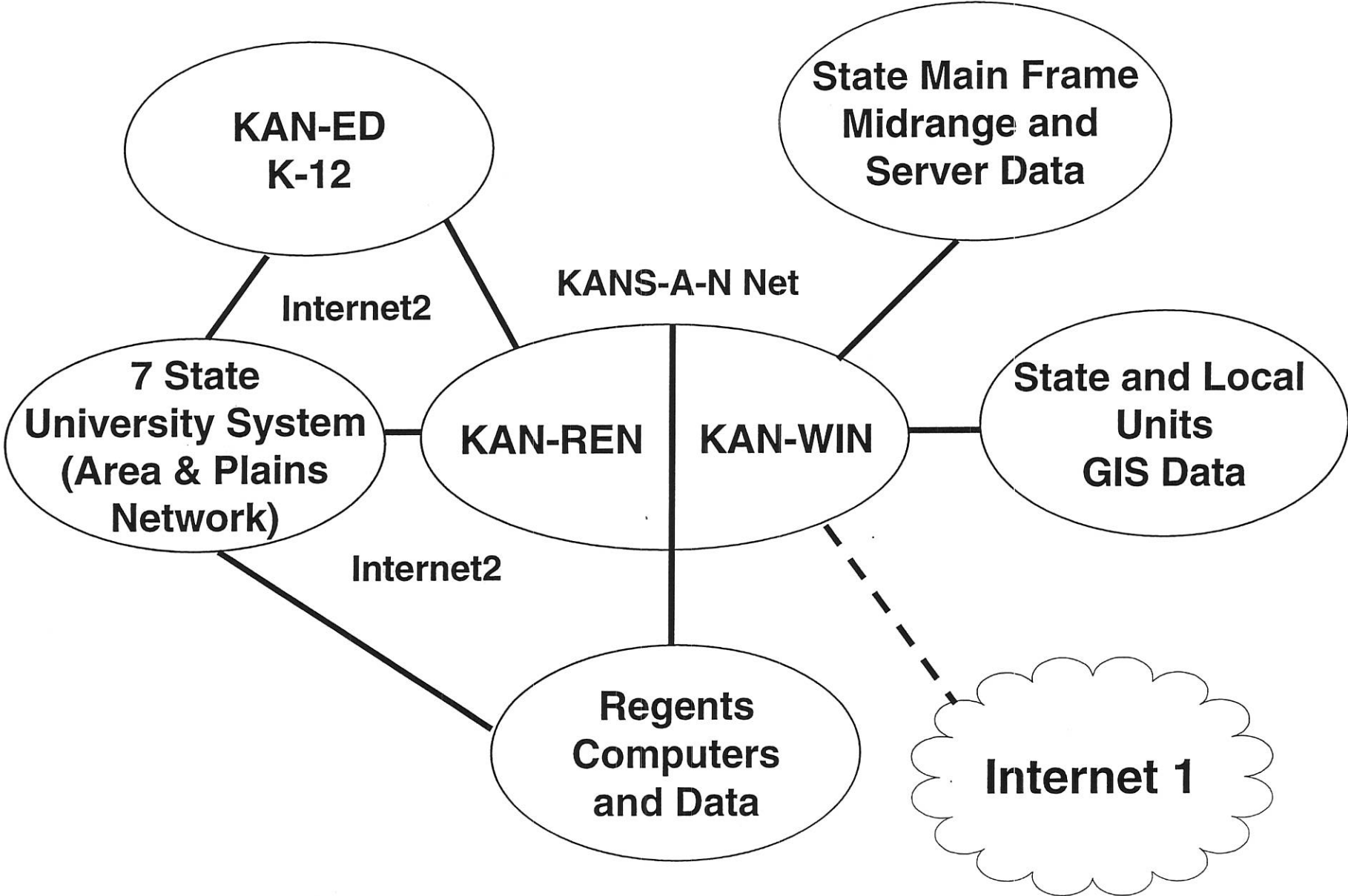
AT&T Public Backbone (same used for data)

AT&T Video access circuits to backbone.

ILEC's Circuits based on tariffs.

Norstan CODEC Provider

KAN-WIN is like an Intranet



KAN-WIN is like an Intranet

- **Intranet Data Not Published to Internet1,
Available through Internet2**
- **High Speed Backbone Rented from Industry
(Network is Bid)**
- **Circuits from Bell or ILECS with Pricing Based on
Tariffs**
- **Scalable to Fit Changing Needs**
- **Price Protected in our Contracts**
- **Fully Managed by DISC**
- **Performance Contracts**

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DISC Services

Industry Owns the Network

DISC Rents and Manages the Network

DISC:

- **Arranges industry contracts for compliance and performance terms**
- **Audits all bills**
- **Rate rebalances charges from vendors and bills agencies average price**
- **Aggregates demand services as the buyer, DISC is not the provider**
- **Runs a 24 X 7 switchboard. The operators available to help citizens find a phone number or help agencies set up video and voice conference.**
- **Has a Network Control Center that operates 24 hours a day, seven days per week**
 - **Single point of contact for outages**
 - **Works with industry for the repair of outages**
 - **Remote diagnostic services**

KAN-ED

The Next Step to a Connected Kansas

Presented by:

Kansas State Department of Education (KSDE)

Sal Tayani - stayani@ksbe.state.ks.us

Greg Rasmussen - grasmussen@ksbe.state.ks.us

Kansas Research in Education Network (KANREN)

Doug Heacock - heacock@kanren.net

Vision

**As we enter the 21st century, every citizen of Kansas
should benefit from the global digital revolution
in information technology.**

**To achieve this vision all Kansans should be
provided with the opportunity, training and
resources to use and exploit electronic
information and technologies for their betterment
now and in the future.**

Responsibility

An enlightened citizenry is indispensable for the proper functioning of a republic. Self-government is not possible unless the citizens are educated sufficiently to enable them to exercise oversight. It is therefore imperative that the nation see to it that a suitable education be provided for all its citizens.

Summarized from Thomas Jefferson

Overview

- **Between 1995 and 1998, information technology producers accounted for about 8% of the nation's GDP, but contributed on average 35% of the nation's real economic growth.**
- **By 2006, almost half of the U.S. workforce will be employed by major producers or intensive users of information technology products and services.**
- **In 1997, information and communications technologies accounted for nearly 30,000 jobs in Kansas, making it the fourth largest and fastest growing employment sector in the state's economy.**

Overview

- In 1997, Kansas ranked first in the nation in the number of computers per 100 K-12 students.
- Currently, Kansas ranks 36th among the 50 states in providing Internet access to the classroom.
- 85% of Kansas schools are connected but only 38% of Kansas classrooms are connected
- 70% of the states report having some type of statewide educational computer network.

Opportunity

- The state of Kansas already has existing government, academia, and private sector information technology resources.
- These resources should be leveraged to build an integrated and comprehensive information and communication technology network for all Kansans.
- Financial leverage of these resources will require smaller investments by all stakeholders and quicker implementation.

Goals

- **The goal is to create an integrated state network that provides:**
 - **Higher quality education and careers for all Kansans**
 - **Greater competitive position for Kansas**
 - **More Kansans qualified for higher paying, high skilled knowledge jobs**
 - **Equal access to electronic information and services**
 - **Life long learning**

Benefits

- KAN-ED will enable:**
- **Statewide access to electronic databases**
 - **Aggregated subscriptions to on-line periodicals and journals**
 - **Development of curricular materials for local as well as statewide use**
 - **Shared instructors, especially in subject areas where there is a shortage of certified personnel**

Benefits

- Access to the wide variety of enrichment materials available through government agencies such as NASA, EPS, and the Library of Congress
- Access to the informal sciences, arts, and humanities education materials through museums
- Provisions for customized training and education to students of all ages
- Increased opportunities for teacher in-service training
- Makes the infrastructure more affordable, scalable and easier to maintain.

The Investment

- The state of Kansas should invest in a comprehensive KAN-ED plan for providing Internet connectivity and technology integration for all of its schools, libraries, and state agencies.
- The major components of this investment proposal are:
 - the network
 - network services, training, and content
 - KAN-ED management
 - the implementation plan and proposed budget

The Network

- **KAN-ED will leverage the following state networks:**
 - **KANS-A-N is the state of Kansas governmental network**
 - **KANREN is research and education network**
 - **KANWIN is a data network for KANS-A-N**
 - **CJIS is the criminal justice network**
 - **KICNET is the library information sharing network**

KSDE Support

- **Equal access for all students**
- **Scalable for the future**
- **Coordinated effort for development and delivery of technology related curricular materials**
- **Leverage costs across state for online resources and connectivity charges**
- **Share valuable teachers across the state**
- **KAN-ED is our doorway to the 21st Century**

Summary

■ **Time is of the essence because:**

- **Kansas is behind Missouri, Oklahoma, Nebraska, and many other states.**
- **The knowledge and technology gap for Kansas is widening.**
- **All stakeholders are willing to work together now!**
- **An investment in KAN-ED is critical to the educational and economic future of all Kansans.**