

Approved _____

Date

1-23-90

MINUTES OF THE SENATE COMMITTEE ON ECONOMIC DEVELOPMENT

The meeting was called to order by Senator Dave Kerr at _____
Chairperson

8:00 a.m./p.m. on January 18, _____, 1990 in room 123-S of the Capitol.

All members were present except:

Senator Jack Steineger

Committee staff present:

Bill Edds, Revisor of Statutes' Office
Lynne Holt, Kansas Legislative Research Dept.
Sue Pettet, Secretary to the Committee

Conferees appearing before the committee:

Mr. Nelson Krueger, KTEC

Chairman Kerr called the meeting to order and announced that Mr. Nelson Krueger of KTEC was to give a presentation on "The Importance of Telecommunications."

Mr. Nelson Krueger supplied the committee with Attachments 1, 2, & 3. He stated that by the year 2000, video conferencing, video telephones, broadband local area networks, high-speed data, and high definition television will be commonplace.

The fiber-optic network will enable schools to pool resources and share teachers. It will also extend the possibilities in education into on-site education and training of employees. It will also improve the delivery of rural medicine.

A thirty-minute video presentation was shown to inform the committee of future options regarding telecommunications.

Mr. Krueger informed the committee that a fiber optic telecommunications network has been under discussion in the State since 1982. In 1988, KTEC and Southwestern Bell began studying the feasibility of switched broadband video. He stated that as Director of the Kansas Telecommunications Consortium, his role is to ensure that the state's telecommunication efforts are coordinated.

These efforts will not only enhance our state educational system, but will also enhance the competitiveness of business in Kansas.

The usage of abandoned pipelines being suitable for laying underground fiber optics was discussed. Mr. Krueger said that it is an excellent environment, and will probably be extensively used in the future.

Attachments 4, & 5 are information supplied to the committee by Research staff.

Chairman Kerr informed the committee that he was sending them a questionnaire regarding their interests in the committee activities this session.

Senator Salisbury made a motion to accept the minutes of the January 11th and 16th meetings. Senator Feleciano seconded. Motion carried.

Meeting adjourned.

Date _____

VISITOR SHEET

(Please sign)

Name/Company

Name/Company

Name/Company	Name/Company
Judy Krueger	SBA
Ron Wilson	KDOC
Jeff Russell	UNITED Tel Cos of KS
Whitney Danron	McMillan's Association
Jim Gartner	Southwestern Bell TEL.-Topoka
Denny Koch	" " " "
Russ Phelps	" " " "
GAYLE GORDON	" " " "
Terald Jennings	DISC - Bur of Telecom
Barbara Paschke	Board of Regents
Pat Holmes	KS Telecomm Assn

The State of the Telecommunications Industry

A Report to the Senate Committee on Economic Development

by Nelson L. Krueger

Director

Kansas Telecommunications Consortium

January 18, 1990

INTRODUCTION

Thank you for the opportunity to share with you some information about the status of the telecommunications industry in general and the possibilities that availability of this technology has for private businesses, education, health care delivery, and government. Because I am a believer that "seeing is believing," I have a video tape that is a compilation of many which can give at least a flavor of progress made and plans for the future in the application of broadband interactive video telecommunications. There are some references I could not eliminate to particular vendors, but from those references we can see the number of businesses cropping up in this industry from ditch diggers to teleconference equipment manufacturers.

(TAPE)

KANSAS

Now that we have a feel for the distance and direction this cutting edge industry can take us, let me tell you a little about where Kansas is. A fiber optic telecommunications network has been under discussion in the State since 1982. In 1988, the Kansas Technology Enterprise Corporation (KTEC), in cooperation with Southwestern Bell began studying the feasibility of switched broadband video. In May of 1989, the Kansas Telecommunications Consortium held its first meeting in the Kansas City offices of United Telephone Company. In September of last year, I was hired as the Director of the Consortium to work on a part-time basis. The mission of the Consortium is to share knowledge on developments in telecommunications in general and to develop a strategic plan for implementing a fiber optic system in Kansas. During this process, my job is to discover the players in this industry - (and they are many and diverse) - to bring them together for productive discussions and cooperation in developing a network that will prove productive in enhancing the competitiveness of businesses in Kansas, in providing equal access to education throughout the state, in addressing some of the problems in health care delivery (especially in rural areas), and in improving the efficiency of government. We are in the midst of finding out what has already been developed and what is on the drawing board. We are also discovering a wide variety of people and businesses developing their own networks, as well as a number of businesses already using as much capacity as is currently available.

ECONOMIC DEVELOPMENT

By the year 2000, in a mere ten years, it is estimated that 20% of business sites in the United States, United Kingdom, France, and Germany will have broadband capability. Video conferencing, video telephones, broadband local area networks, high-speed data, and high definition television will be commonplace. The French and Japanese are already well ahead.

MEDICAL SERVICES

Two-way interactive audiovisual communications between rural Kansas health care facilities and major medical centers would facilitate immediate medical consultation with specialists at research hospitals. Enhancement of home-based health care and emergency monitoring services would be possible.

EDUCATION

Local schools are a cornerstone of a community. When a school closes, it is a blow in more than economic terms. With a fiber optic network, schools can pool resources and share teachers. There are several situations which receive consideration from KCC tariffs as demonstration projects. They are sharing language, chemistry, and physics teachers making it possible for students to fulfill college-bound curriculums. The possibilities in education are great and extend into on-site education and training for employees of firms needed to transition into newer technologies or change product lines. These schools will be the focus of an education technology fair to be held in the Capitol February 15, 1990.

SUMMARY

The questions that come to mind are: How necessary is it? With true competition emerging in the area of telecommunications, it may be discovered that existing providers are willing to shoulder a large burden of cost in order to capture or retain market share. Is there something the State should do to participate more in the development of this broadband telecommunications network? Are there rules, regulations, or laws which inhibit the implementation of such a network? Is it to the broad interest of the State to provide incentives or other forms of investment for private development and networking, or should the State underwrite a portion of the costs for certain types of implementation? These and other questions are being discovered and discussed through the consortium. There is also legislation pending at the federal level which may open the field further. The proposal involves allowing telephone companies to deliver cable television to homes. If that idea would carry, the reverse may also be true and the complexion of the industry will change accordingly.

THE ARRIVAL OF THE INFORMATION AGE

A Background Paper

Presented to

The Kansas Telecommunications Consortium

Nelson L. Krueger, MS

Director of
KTEC

Kansas Telecommunications Consortium

January 1990

The Arrival of the Information Age

In 1934, the United States Congress enacted the Communications Act with the stated purpose of ensuring "that the benefits of new inventions and developments may be made available to the people of the United States."

At that time, it was too early to predict the communication infrastructure that would emerge as a result of technological innovations. Buck Rogers envisioned a scientific world of space travel, Dick Tracy, a wrist radio and Captain Kirk of the Enterprise, transporter rooms and more. Most of that is here today. Our challenge is to encourage our lawmakers to provide a business and regulatory environment that will stimulate innovation and facilitate technology transfer from academic institutions to industry. Currently, many Kansans can connect their home computers to the telephone network with a modem to access local bulletin boards, libraries, news services and business opportunities. Several strategic management groups offer software packages that are user friendly and make a businessman in Natoma, Kansas, as knowledgeable as his Wall Street counterpart because they both have the same information at the same time. In fact, in the early 1980's many corporate communication department knew it would be less expensive for them to bypass the local telephone company and set up their own communication highways. When analysts found that many companies such as Prudential could install their own networks and experience costs eighty percent less than the use of local phone company circuits, the legal system responded with deregulation of the telecommunications industry.

Kansans can be proud of their position in telecommunications because they are on the leading edge of communications satellites; microcomputer technology; fiber optics and laser disc interactive video innovation. The Kansas Telecommunications Consortium has been formed to represent the telecommunications interests of education, government, health services, and private businesses. The mission of the consortium is to establish an accessible, cost effective, state-of-the-art telecommunications system throughout the State of Kansas.

This public/private economic development Consortium shares expertise. Consortium members include Kansas Independent Network, Inc., (KINI) Southwestern Bell, United Telephone, AT&T, US Sprint, Kansas Board of Regents, Kansas Department of Education, State Department of Information Systems, and Kansas Technology Enterprise Corporation representing the private sector. At a recent conference sponsored by the Silicon Prairie Technology Associations, Kansas universities and their telecommunications departments compared notes with counterparts on their advanced research in the communications area. They looked good. However, we may be a little like the rabbit in "Alice in Wonderland" who said, "we have to run as fast as we can to stay where we are."

There is a continuing explosion in telecommunications innovation that has already changed the way we do business. We can connect computers to the telephone net-

work and tap vast libraries of data. Computers can be connected with a local area network and managers can break loose from hierarchical constraints to share information and form teams to solve problems. Connect those local area networks (LAN's) to one another and managers across the regions, across the world, become a true community of professionals - able to share resources, cross traditional boundaries, and function both *independently* and *interdependently*. Knowledge begins to emerge.

Where are we and where are we going? The new buzz words are "fiber optics" and "broadband". Essentially fiber optics are a transmission media, like the common copper wire we have used for over one hundred years. Only the information carrying capacity of optical fibers is currently over 20,000 times that of common telephone copper wire. Further, there is potential for future technology to provide several orders of magnitude more information capacity over existing fiber. This will be achieved by improved electronics and photonics. The economic trends clearly indicate that this media, capable of massive information transport, will be available to the individual.

As far as the end user is concerned, an essential element of broadband networks (in the trade referred to as Broadband-Integrated Services Digital Network (B-ISDN)) will be their ability to provide network capacity on demand. This means that we will no longer be tied to sending information at fixed discrete rates, for example, 56kbps or 1.544Mbps dictated by the network. Rather the network will accept the information at the rate naturally generated by the source. The other essential of B-ISDN will be its ability to provide common access for voice, data and video. Fiber optic technology is making B-ISDN possible.

At the present time, few business sites have broadband. However, the development timetable for broadband advanced by the electronics industry reveals *twenty percent* of business sites in the United States, United Kingdom, France and Germany will have integrated broadband services by the year 2000, just ten years away (see Figure 1).

Telecommunications, in general, and switched broadband video, in particular, will serve as a catalyst for future economic development. In fact, some have referred to it as "Inventing the Future of Western Kansas." We can view centralized databases and other information sources connected with increased bandwidth fiber optic cable offering information technology that has the potential to effect the rural quality of life in the twenty-first century as interstate highways did in the twentieth century as the rail system did in the nineteenth century.

There is no question that the future and prosperity of Kansas is dependent on enhanced information networks because they benefit both rural and urban areas. Information, in essence, is what we as individuals and as a nation will increasingly

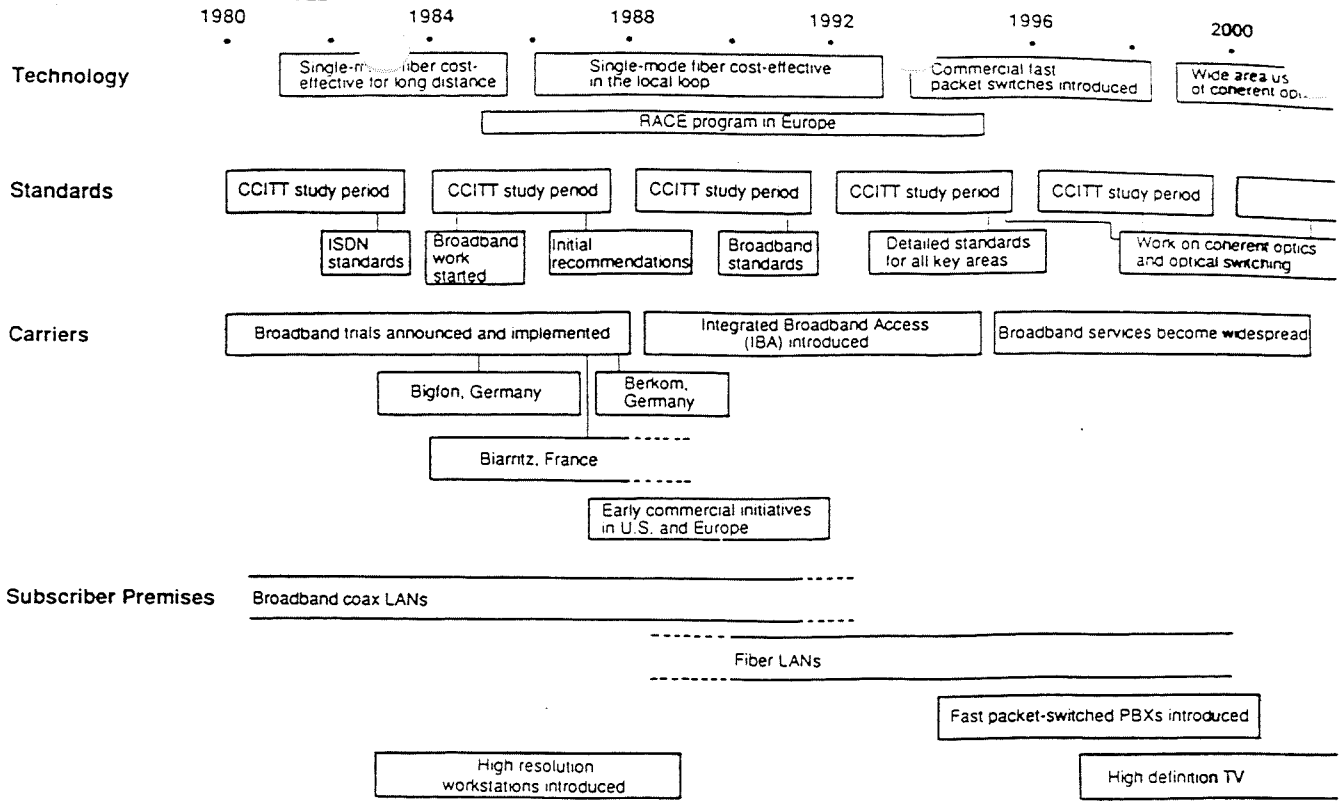


Figure 1a
The Development Timetable for Broadband

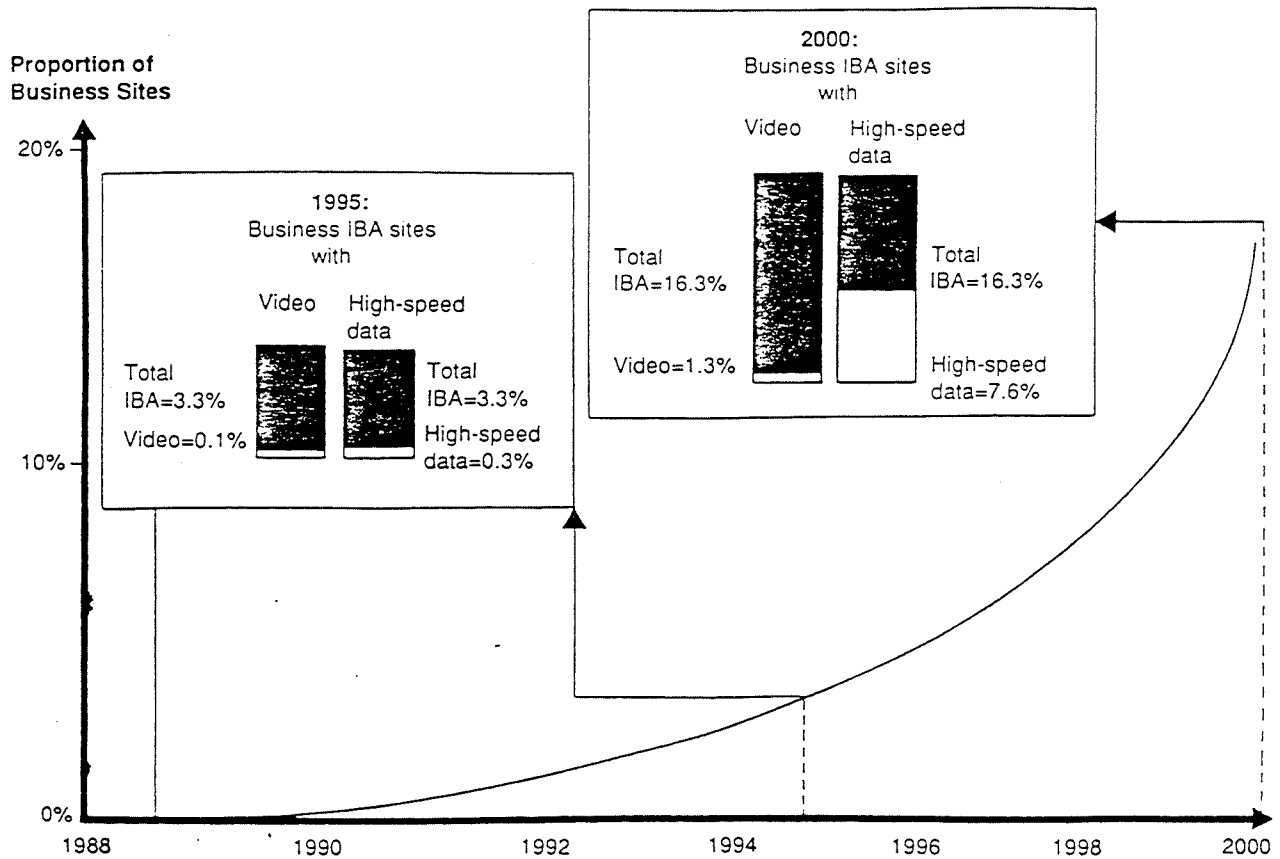


Figure 1b
Proportion of business with IBA and broadband applications (U.S., U.K., France and Germany)

2-4

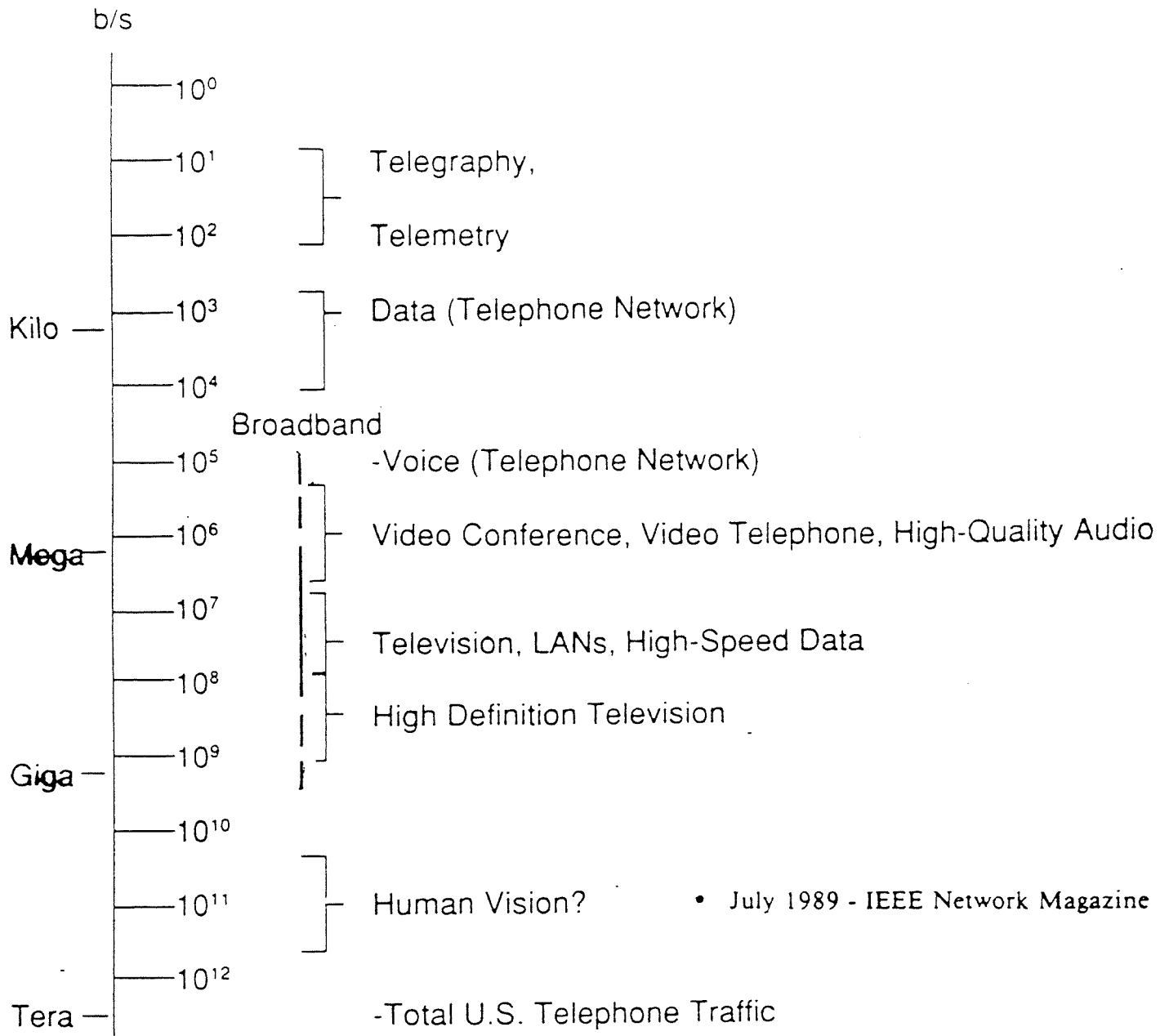


Figure 1c

produce, process, transmit, and receive and export. The following services provide examples of how high speed networks can affect Kansas.

- * Educational services - shared library databases and library would be possible through a broadband network access to several or more regional libraries. The regional libraries would have connections with state, national and international library nodes, thereby providing electronic inter-library loan and access by rural communities to some of the finest bibliographic resources in the world. On-line encyclopedias for at home education, language translations and the ability to conduct scientific research through collaboration technology would be other benefits. In addition, distance learning to unserved and underserved areas would be commonplace.
- * Medical services - two-way interactive audiovisual communication between rural Kansas health sites and major medical centers would facilitate immediate medical consultation with specialists at research hospitals. Home-based health care and emergency monitoring services would be possible, along with allowing transmission of complex patient medical information, such as cardiac images, to be read by specialists at hospitals specializing in their particular field.
- * Residential Services - home banking, home shopping, home security and at-home use of telecommuting networks would provide access to government databases for employment information, motor vehicle registration, public housing, electronic voting and a host of emergency community bulletin boards.

These are but a few examples of these services that will be available to all of us through the telecommunications networks of the future. It is unbelievable how much of "Buck Rogers" is here today.

The important question for the telecommunications industry, regulators and nation is: will these resources be developed in a way that promotes the greatest social good or will current regulatory policy, more suited to the technology of the past continue to impede the expansion of public networks and the deployment of innovative services?

One significant issue on "the politics of broadband" that needs to be addressed is the regulatory barrier to local exchange carriers deploying fiber optic technology in local loops that is, fiber to the home for narrowband voice and data services. This prohibition was part of the Modification of Final Judgement (MFJ) that broke up AT&T.

The only exception to this prohibition would be a waiver for rural areas with fewer than 2,500 inhabitants. This exception may provide an opportunity for innovative companies to get involved in deployment of fiber in Kansas.

The Kansas Department of Education recognized the possibilities of advanced communication using fiber optics in their instructional process and has established two demonstration projects using interactive video. One pilot project involves a cluster of schools in southwestern Kansas. In this case, ten public school sites were connected with a two-way visually interactive instructional television network. Another project is at Greenbush, a southeastern Kansas Educational Service Center in Girard, Kansas. Specifically, four school districts in Girard, Arma, Columbus, and Cherokee banded together to develop a telecommunications system, connected through fiber optic cable, which permits students and teachers to see, hear, and communicate with each other simultaneously. One interactive classroom will be located in each of the networked districts' high schools and one in the Southeast Kansas Education Service Center at Greenbush. Independent telephone companies are assisting with the network project. However, the network's objective of linking the schools to Pittsburg State University has been impeded because Southwestern Bell owns the lines between Girard and Pittsburg and the company has quoted a rate for the use of its lines that is considered by the network to be unaffordable. In defense of those rates, Southwestern Bell noted that it would have to install fiber optic cable along that route. To do so would be an expensive proposition.

Another proposal for fiber optic network in western Kansas has come from the President of Fort Hays State University. The salient features of a proposed western Kansas fiber optic network which would cost approximately \$8 million to \$10 million and involve the installation of a 500-mile main trunkline fiber optic network linking Colby, Hays, Great Bend, Dodge City, Garden City, and Liberal. Williams Pipeline Company and its subsidiary, Wittel, have an abandoned pipeline containing fiber optic cable which could be used for these linkages. The four functions of such a network would include: (1) delivery of two-way educational services; (2) improved delivery of rural health care services; (3) library networking; and (4) increased economic development to the extent that economic growth generally follows the expansion of fiber optic network lines.

The TeleKansas is another example that would authorize Southwestern Bell to upgrade over a five-year period 131 switching systems (mostly in sparsely populated areas). This modernization program would cost approximately \$160 million and would require changes that would give the Company more flexibility in pricing its products.

These projects are wonderful and are giant leaps forward in applying technology in education. Further such techniques will be essential for bringing quality science, mathematics, and language education to the many small Kansas communities. Communications technology will allow these communities to share the valuable resource of well trained and motivated teachers. Let us look at how far we have to

go.* Ten years ago, there were no computers in our nation's schools. Today, there is at least one in almost every school in America - nearly two million computers being used for instructional purposes. Yet, in spite of the rapid introduction of this new technology into our schools, the educational system remains remarkably unchanged.

In fact, according to the US Congress's Office of Technology Assessment, the classroom of today "differs little from the classroom of fifty years ago. This is in sharp contrast to the business office or government facility of today, which has been sharply altered by technology." The evidence clearly indicates that technology has yet to become an integral part of the everyday educational experience of children. It remains, for the most part, a toy - not a tool.

Is it the teacher's fault that our children are preparing for tomorrow's world with yesterday's technology? According to "The Computer Report Card, a recent nationwide survey that asked teachers to grade the effectiveness of computers in the classroom, they overwhelmingly endorsed the power of technology to address some of their most intractable problems:

- * Three-quarters of the respondents said computers would enable them to spend more individual time with their students.
- * Ninety percent said that the lack of access to computers puts students from less-affluent schools at a disadvantage.
- * More than ninety percent believe computers can spark their students' interest in math and science.
- * The vast majority think computer-based writing and reading programs would reduce the illiteracy rate.
- * Ninety percent say they hope to see the increased use of more sophisticated computer teaching systems in the classroom including interactive computers and videodiscs.

What these numbers tell us is that teachers are a receptive audience for advances in technologies. Teachers, as a group, are hungry to apply communications networks, computers, video systems, and software in new, creative and educationally meaningful ways.

But how can they begin to use technology as an innovative learning tool when the current ratio of computers to students is less than one for every twenty pupils (in the good schools - one per hundred in most)? When the technology, more often

* The following information was based on a speech by Raymond W. Smith at the Conference on the Future of Interactive Communications, November, 1989.

than not, is relegated to a school laboratory rather than integrated in the classroom? When the available software is woefully inadequate for even rudimentary applications, let alone the sophisticated interactive programs that are now available. Telecommunications network throughout the educational system mostly consist of a single telephone line.

The problem, or I should say, the challenge, is to find the way to match the will, to give educators the means to achieve their ends, to integrate technology into the educational lives to this country's children. Can we create the conditions for technology to fulfill its potential as an educational resource?

The potential to achieve this goal is here if all of us are willing to pursue an expansive visions of our future. That vision must go beyond the traditional forms of assistance provided to the public schools.

We need projects like the education technology fair scheduled for February 15, 1990. See Table 1. It is becoming clear that the national concern over education (both K-12

EDUCATION TECHNOLOGY FAIR

State Capitol Building, Topeka, Kansas

February 15, 1990

Exhibitors

<u>Local Education Agency</u>	<u>Subject</u>	<u>Local Contact</u>
Jefferson County North USD 339	Science	S: Robert J. Shanks P: Jonathan Brown (H.S.) I: Dave Chaffee
Olathe USD 233	Multi-Media in the Library	S: M. L. Winters P: Patricia All (Olathe South H.S.) I: Loretta Wood
Emporia USD 253/Flint Hills AVTS	CAD, CAM	S: Harold Hosey D: Keith Stover (AVTS) I: Floyd Snyder
Emporia USD 253	Integrated Learning Systems	S: Harold Hosey D: Dan Lumley P: Wayne Bastin (South M.S.) I: Kathryn Taylor (Lab Coord.)
Lawrence USD 497	Social Studies, Economics, and English	S: Dan Neuenswander P: P. Kay Duncan (South J.H.S.) I: Linda Hyler
Topeka USD 501	Writing	S: Gary A. Livingston A: Ronald L. Epps (Asst. Supt.) I: Caroline Seals (District Office)

Table 1.

2-10

9

<u>Local Education Agency</u>	<u>Subject</u>	<u>Local Contact</u>
Youth Center at Topeka	Basic Skills	S: Harold F. Allen P: Gregg Nielson I: David DeMoss (SEKESC)
Rolla USD 217	K-8 Computer Lab	S: Walter Neill Hays P: Mac Plummer (Rolla E.S.) I: Helen O'Hair
Elkhart USD 218	Home Economics	S: Phillip E. Johnston P: David Roberts (H.S.) I: Anita Witcher
Hill City USD 281	PFS Business	S: Thomas V. Heiman P: Lawrence J. Schulenberg (H.S.) I: Diana Hart
Brewster USD 314	Mathematics	S: Jean S. Lavid P: Jean S. Lavid (H.S.) I: Willis Crabtree
Salina USD 305, Central Kansas Cooperative in Education	Communication Devices: Special Kids	S: Andy Tompkins D: Roger Allen (Coop.) I: Marge Delkar (Coop.)
Hutchinson USD 308	Developing Employability Skills for Special Needs Students	S: William L. Hawver P: Mike Wortman (H.S.) I: Jim Harshbarger (H.S.)
Wichita USD 259	Journalism Desktop Publishing (East H.S.)	S: Stuart Berger A: John Morton (ArS) P: Jonathan Wells (H.S.) I: Vicki Churchman (H.S.)
Fort Scott USD 234	Teacher Productivity Model	S: Fred F. Campbell, Jr. I: David DeMoss (SEKESC)
Southeast Kansas Education Service Center	Life Education Center Mobile Unit	D: David DeMoss

Table 1 (cont.)

and workplace literacy) is driving state expenditures for fiber linking schools for distance learning and other integrated video, data and voice applications. Many believe education via fiber to the home is, or can be an evolutionary next step.

We have the opportunity to push this thesis along and do so with some visibility in Kansas. First because of the size and scale of Kansas' plans and second, the influence we enjoy in the state, particularly through our State Chairman, former Senator Dole aide, Nelson Krueger.

There are several important events scheduled for mid-February, 1990 in Topeka, that would provide an excellent forum to raise the awareness and demonstrate the capability of fiber an fiber to the home.

This event is being coordinated by the Kansas Department of Education, the Kansas State Government, and KTEC (The Kansas Technology Enterprise Corporation) - a consortium of industry, private business, and government entities interested in the advancement of video technology (See Table 2 for details).

The broadband network of the future can change the way we work, think, entertain, and learn. If allowed to develop within an enlightened environment, this technology will create a diverse, richly varied marketplace of software and hardware producers making new communications products for the office, the home and the classroom.

To build the nationwide broadband network that will support the educational and other services we have discussed will take an enormous investment, in the range of \$400 billion. It is an investment our competitors in global markets are making, and making fast: France leapfrogged the rest of the world when it introduced its Minitel terminals in 1982; Japan is committing fifteen years and more than \$200 million to a complete modernization of its communications system, and Germany, Spain and other European nations are investing heavily in communications as they move toward a borderless economy in 1992.

In contrast, the United States has yet to recognize the importance of telecommunications as a strategic industry, not only for its own sake, but for its "spill-over" effect on other aspects of our national life, including education. In fact, The patchwork quilt of existing policies and multiple layers of regulation have the opposite effect. Rather than encouraging the bold and imaginative use of our resources, current policies induce timidity, breed inaction, and retard innovation.

This is perverse and unnecessary. And it runs counter to the stated objectives of the public policies that have governed telecommunications in this country.

Table 2

February 15, 1990

EVENT: Education Technology Fair

To be held in the Supreme Court Building and State Capitol Building - hearings on bills pending before both the State Senate and State House of Representatives.

In tandem with Kansas Department of Education and organizers of the fiber demonstration day, OPT IN AMERICAN could conduct the following:

1. Demonstration of education via fiber two way educational demonstration (coordinate with Bellcore and Southwestern Bell).
2. Press Conference - Governor's Task Force on Communication:
Release a recommendation to Governor in fiber of fiber-to-the-home.

KTEC and/or Kansas Department of Education:
Formally endorse the implementation of fiber-to-the-home, and the benefit RTTH will have for education.

Opt In America:
Announce formation of OIA National Taskforce on Education

Chair: Lee Droegmueller
Commissioner of Education
State of Kansas

National Committee:

Dr. Douglas Carter
Former President
Washington College

Henry Cauthen
Executive Director
South Carolina Educational Television Network

Edwin Cohen
President
Agency for Instructional Media

Philip English
Vice President for Technology
America Assn. of Community & Junior Colleges

James Fellows

James Fellows
President
Central Education Network

Sue Fratkin
Director of Special Programs
National Association of State Universities and
Land Grant Colleges

Carol Henderson
Deputy Director
America Library Association

Paul Norton
Executive Director
Wisconsin Educational Communications Board

Alan Oster
President
American Association of State College and
Universities

Dr. Samuel G. Sara
Executive Director
National Association of Elementary School
Principals

Dr. Scott Thompson
Executive Director
National Association of Secondary School
Principals

"Formal Release" of OIA White Paper on education

3. Seminar/panel discussion on interactive education.
(Invite representatives from universities, private and public libraries, superintendents, curriculum directors and teachers from Kansas school districts, and other appropriate organizations/individuals)

John Eger - Chair Opt In American
Lee Droegmueller - Kansas Secretary of Education
Will Kitchen - nationally recognized expert on distance learning
Rich Gross - Dean, Telecommunications, Kirkwood Community
College

Terry Smith - Instructional Technology Specialist, Jefferson
County Schools
Other

4. National Media

Stimulate national media interest. Invite prominent members of the media who are familiar with fiber technology to attend the event. For example, the New York Times, Chicago Tribune and Washington Post.

5. Information Table

Opt In American kits and other material

Alfred Sikes of the FCC makes this point in a recent speech on the role of high technology in the American economy; the original intent of the Communications Act of 1934 he says was to ensure "that the benefits of new inventions and developments may be made available to the people of the United States."

In fact the Kansas Independent Network, Inc. (KINI) made up of a group of independent telephone companies won the cellular 'grab-bag' and is in the process of installing the initial fifteen of some thirty cell sites across Kansas. We will be able to have mobile service anywhere in the state. Since the sites will be interconnected with fiber optic cable, we have an opportunity for Kansans to help Kansans. There will be extra fiber capacity on this network and the education community could receive service at an attractive rate. KINI owners are Kansas businessmen whose current network currently serve small rural areas. They are willing to make an investment in education and ensure early delivery of this technology to benefit the state. It is hoped that the Kansas Corporation Commission will aid in the introduction of this new service.

Policies that encourage the widest possible dispersion of the widest possible number of information-age services will do far more to improve the quality of America's educational system than the current uneven and iniquitous distribution of technological resources. It has been demonstrated that communications technology can be put to creative imaginative use by educators from elementary school to graduate school.

It is important to put this new tool in the waiting hands of America's teachers. We need to encourage the widespread use of the interactive video technologies. This is the vision of the future is one to which we should be firmly and passionately committed.

With the enactment of the Communications Act of 1934, it was too early to predict the communications infrastructure that would emerge as a result of technological innovation. Today, it is too late to ignore it, the information age has arrived.

K
I
N
I**Kansas Independent Network, Inc.**

United Bldg. - Suite 1002
119 W. Iron
Salina, Kansas 67401

(913) 823-5049
(913) 823-5056
FAX # 823-3856

KANSAS INDEPENDENT NETWORKS, INC.

Kansas Independent Networks, Inc., (KINI), is a management/services organization which provides support in the areas of financial, legal, engineering, regulatory, marketing, pricing and operations services to 28 independent rural telephone companies in the state of Kansas. The purpose of the organization is to bring cellular and network services to rural Kansas. The KINI offices are located in Salina, Kansas.

The following is a list of companies which Kansas Independent Networks, Inc. supports.

ASSARIA TELEPHONE EXCHANGE, INC.
BLUE VALLEY TELEPHONE COMPANY
COLUMBUS TELEPHONE COMPANY, INC.
CUNNINGHAM TELEPHONE COMPANY, INC.
GOLDEN BELT TELEPHONE ASSOCIATION
GORHAM TELEPHONE COMPANY
H&B COMMUNICATIONS, INC.
HOME TELEPHONE COMPANY, INC.
KANOKLA COMMUNICATIONS, INC.
K-M DIAL COMPANY, INC.
LA HARPE TELEPHONE COMPANY, INC.
MADISON TELEPHONE COMPANY, INC.
MOUNDRIDGE TELEPHONE COMPANY, INC.
PEOPLES MUTUAL TELEPHONE COMPANY
RAINBOW COMMUNICATIONS AND ELECTRONICS, INC.
RURAL TELEPHONE SERVICE COMPANY
S&A TELEPHONE COMPANY, INC.
S&T TELEPHONE CO-OP ASSOCIATION
SOUTH CENTRAL COMMUNICATIONS, INC.
SUNFLOWER TELEPHONE COMPANY, INC.
TOTELCOM OF KANSAS, INC.
TRI-COUNTY TELEPHONE ASSOCIATION
TWIN VALLEY TELEPHONE, INC.
UNITED TELEPHONE ASSOCIATION, INC.
WAMEGO TELEPHONE COMPANY, INC.
WILSON TELEPHONE COMPANY, INC.
ZENDA TELEPHONE COMPANY, INC.

Marketing as basis

The pioneerings days long gone, Fokker nowadays plans and produces its aircrafts under totally different conditions. This includes a constant and close scrutiny of market trends. At present no aircraft is designed, let alone built, without a thorough knowledge of market demands. The world's passenger traffic characteristics, financial data, and IMF economic indicators, as well as the aerospace industry media serve as sources for Fokker's team of marketing professionals. Only when an aircraft is positioned for its market and the technical and economic basis has been established, do Fokker's design experts and engineers start their job.

Thinking, building, and selling aircraft, however, are not all that Fokker is about. The company may be best known for its marketing and technical prowess in maintaining a world-wide lead in short-to-medium-range aircraft design and production, but there is more. Fokker is in a sense a company of specialists, each with a particular area of expertise. As such Fokker is engaged in the co-production of the General Dynamics F-16 air-superiority fighter used by the U.S. Air Force and its NATO partners, including Holland, Norway, and Denmark. Fokker also builds F-16 components, while offering maintenance and modification programs for it as well. Also, Fokker builds wing components for the European Airbus and is involved in nearly all important European space projects.

New technology

Fokker's diverse fields of expertise also include the technique of adhesive metal bonding, a process that Fokker pioneered and perfected. Special instruments had to be designed to measure the binding power of adhesive layers.

Reducing weight is one of the foremost objectives in the ongoing attempts to make commercial aviation as economically viable as possible, and metal bonding techniques and new carbon fiber and composite plastic components are constantly researched, made operational, and applied in the production of aircraft. Fokker's decision to opt for Ypenburg as the central location to further develop these techniques, and computer-controlled components production processes, underscores the importance the company attaches to the area of The Hague.

Chamber Sponsors Seminar on Europe and Telematics

On September 8, 1989, the Netherlands Congress Centre in The Hague was the scene of a seminar organized by the Hague Chamber of Commerce and the participation of Chambers of Commerce in the Netherlands. The seminar was devoted to Europe and Telematics, a topic inspired by an awareness of the increasing speed with which telecommunications infrastructures and informatics services are developing in Europe. While telecommunications and informatics are becoming ever more important for major industries, and funds are being made available for further development in this field, small and medium-sized companies are lagging behind in utilizing them. It is yet unclear whether this stems from unfamiliarity or from a reluctance to face the new techniques now available. A lack of adequate information on the subject may be the reason.

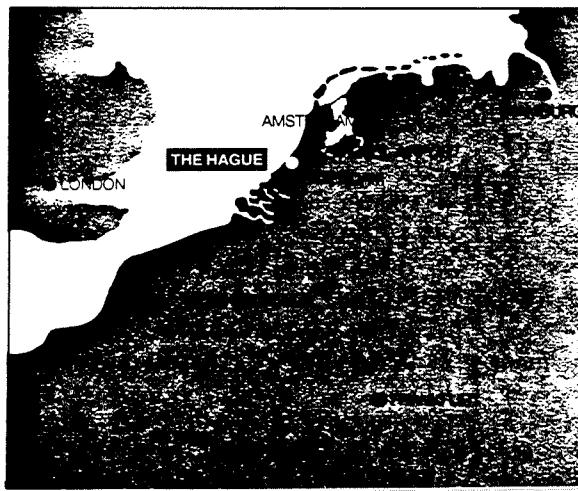
This possible lack of information has led the organizers of the seminar, which was held under the motto "Technological Innovation in the Communication Sector at the Service of the Small and Medium-sized Enterprises," to invite noted speakers to address a wide variety of subjects. These ranged from electronic data transmission to telecommunications and logistics as applied in distribution processes as well as company-information databanks in Europe along Chambernet Europe lines.



The chairman of the Hague Chamber of Commerce, Joop Fernhout, opened the seminar on telematics.

More harmonization

Participants came from diverse backgrounds, including boardmembers, members and staff of the Netherlands and European Chambers of Commerce, as well as representatives of companies in EEC countries active in telecommunications and related sectors. Views and ideas were exchanged and expressed during the seminar; one topic on which a general consensus was quickly reached concerned the need for more harmonization on a European level. This is especially important for suppliers of telecommunications hardware and services, the national Post and Telecommunication offices, and consultancy agencies if they are to respond adequately to European regulations.



Figures - Metropolitan The Hague

Population	687,000
Number of firms	25,514
Labor force	295,000
Agriculture & Fisheries	0.7%
Industry (incl. buildings)	15.9%
Service sector	83.4%
(Government & Public sector	30%)
Number of Embassies	72
Number of bi-national Chambers of Commerce	21
Foreign schools: American, British, French, German, Indonesian	
Number of international pupils	2,900

Figures - The Netherlands

Population	14.7 million
Density of population	434/sq kilometer
Labor force	6,055,000
Agriculture & Fisheries	1.4%
Mining & Industry (incl. building)	30.7%
Service sector (Government & Public sector	67.9% 248
20%)	
Gross national product	212.7 billion US \$
GNP per capita	14,460 US \$

The Hague Chamber of Commerce and Industry

Attracting foreign interest

The reputation Holland has earned for itself as a major distribution center has attracted the interest of companies from all over. More than 4,000 foreign companies have established operations here. Of these, the United States has the largest number of foreign concerns in Holland (1,500).

Mr. Van Steenberghe had good news for these companies. According to him, American subsidiaries in the Netherlands have on average a higher return on investment than those in any other EEC countries.

'The labor costs may be more,' he said, 'but we have high productivity. So at cost-per-unit, we are very competitive.'

The country's stable social atmosphere, good distribution system, strong fiscal climate, the recent reduction in corporate income tax, and the high-quality labor force all figure as key factors in luring foreign investment.

All speakers during the two-hour briefing for the Missouri delegation expressed their belief in the substantially improved competitive position of the Netherlands and indicated they were convinced the country is well-placed to exploit the changes 1992 will certainly bring.

Message for back home

For its part, the Missouri Legislative Delegation was particularly impressed by the information on the Dutch gateway function. Senator and mission leader Mathewson said he would take the good news home with him. 'Distribution is a serious concern for Missouri companies wishing to do business in Europe,' he said during a brief interval between briefings. 'Our visit here is instrumental in obtaining information which will be important to us when we discuss measures to help Missouri businesses overseas. Right now we are in the process of convincing the state legislature to make funds available for smaller manufacturers so they can take advantage of the single European market after 1992.'

Part of the work resulting from the visit will be waiting when the delegation comes home. Explained Mathewson: 'We will be evaluating our commitment to expand our



Senator James L. Mathewson

want to have as strong a position and image as possible for Missouri companies. For this purpose we keep a State Office in Dusseldorf which has been in existence for some ten years.'

He does not share the often heard fear that Europe will turn into a fortress once the unification process takes effect. 'We have to educate our constituency to the services and market opportunities such as we have encountered here,' said senator Mathewson. 'We believe it is a good thing. Missouri enjoys a number one position in the States

based on productivity. Our businesses and products are very diversified, ranging from automobile and steel industry to wood products. We feel that the state must make a decision to be a positive force in Europe after 1992.'

Tax-free Shopping for non-EEC Visitors to Holland

Good news for non-EEC visitors to Holland. Purchases over DFL. 300.- may be eligible for restitution of the 18.5% Dutch sales tax. This form of tax-free shopping has been in effect for some time, but unfamiliarity with the rebate has prevented many visiting businessmen from making use of it. Shopkeepers participating in the system can be recognized by a distinctive sticker in their storefront window. A so-called Shopping Check will be handed out with every purchase, which must be stamped by the Dutch customs service upon leaving the country. The actual restitution of the sales tax can be made by having the amount be credited to one's credit card account or by a guaranteed check. There are over 2,000 shops in the Netherlands offering this form of tax-free shopping, and informative booklets in six languages are obtainable at congress centers, four-and five-star hotels, KLM Airlines, and tourist information centers throughout the country.

Innovation Centers Provide Support for Companies Seeking Information on Technology

Technological advancements create both opportunities and threats for large and small companies. Yet the rapid changes in the way technology is becoming a marketing tool poses perhaps the greatest threat to small and medium-sized companies. For them the source for obtaining crucial information on new technology is often obscured. Unlike big corporations, which can rely on the ingenuity of R&D departments, small and medium-sized companies must look elsewhere. But where?

Questions such as these have led to the creation in the Netherlands of so-called Innovation Centers, of which eighteen will eventually be established. Acting much like

to bring seekers and providers of information on technology and innovation together rather than to actually produce knowledge themselves. Industrial firms and companies in the construction, trade, and service sectors, both Dutch or international, can make use of the services of the Innovation Centers. In June 1989, the Innovation Center in The Hague was the 12th of its kind to open its doors.

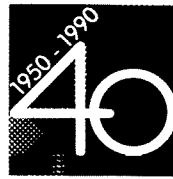
Closing the information gap

Because of their dependency on a vast array of research institutes, special foundations, universities, and technical institutes for

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INTER
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Teleglobe Canada, Tomorrow's Technology Today

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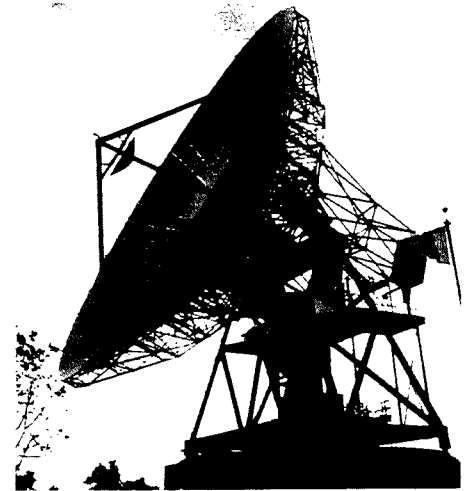
As Honourary Chairman of INTER COMM 90, Teleglobe's President and C.E.O., Jean-Claude Delorme, will be one of the internationally renowned speakers to address the four-day congress which focuses on critical issues facing the telecommunications industry today.

Teleglobe, part of the Memotec group of companies, is Canada's international telecommunications carrier, providing the telecommunications link between Canada and almost every country in the world. The corporation's global network reaches more than

200 countries using both satellites and fibre optic as well as conventional submarine cables.

As Canadian signatory to Intelsat and Inmarsat, and a partner in numerous submarine cable projects, Teleglobe participates in the development of the global telecommunications network and its new switching and transmission technology, which is becoming increasingly digitized.

The benefits of new technologies such as fibre optics and digital switching have enabled Teleglobe to cater to increasingly sophisticated customer requirements with increased reliability. Moreover, the greater operational efficiency and increased capacity of these systems has contributed to lower costs for the users of Teleglobe's international telecommunications systems.



Honourary Chairman Jean-Claude Delorme, Chairman Peter Booth and Executive Committee members Phil Heard & Barry Smith celebrate Teleglobe's host sponsorship of INTER COMM 90

Bits and Bytes

- INTER COMM 90's sponsors include: Teleglobe Canada Inc., Newbridge Networks Corporation, B.C. Tel Group, Telecom Canada, Infonet and Telesat Canada.
- We've booked rooms at major international hotels within walking distance of the Vancouver Trade and Convention Centre, home of INTER COMM 90. Please contact us for further information on accommodation.
- Vancouver is world renowned for its beauty and hospitality. We've made arrangements for pre and post sightseeing tours of the city and surrounding areas. Don't miss out on this exciting opportunity.
- Our Chairman, Peter Booth, recently toured Asia and Europe on behalf of INTER COMM 90 and received tremendous response to the event from industry leaders. Our next promotional tour includes Eastern Canada, the United States, New Zealand, Australia and Singapore.
- Watch for INTER COMM 90 at Commtel Asia '89 in Hong Kong in December.

A Message from Jean-Claude Delorme



It was with great pleasure that I accepted the position of Honourary Chairman of INTER COMM 90. As Canada's overseas telecommunications carrier, Teleglobe is well aware of the rapid and exciting changes that are taking place in telecommunications around the world. Like our colleagues, we face the challenges posed by new technology, burgeoning demand for service and a changing regulatory environment.

I believe that INTER COMM 90 will constitute an excellent forum for anyone involved in telecommunications to deepen his or her awareness of these important issues. With a rostrum of important speakers and a number of themes focusing on emerging trends, the congress will provide those who attend with the background knowledge required to make judicious decisions in this rapidly evolving world. Moreover, the exhibition, with its displays and demonstrations by companies actively involved in the communications area, will showcase the latest in innovation and technology.

It was for these reasons that Teleglobe chose to become the exclusive Host Sponsor of the congress and exhibition. I am sure that our participation will be beneficial and I encourage you as well to attend and take part in INTER COMM 90.

*Jean-Claude Delorme
President and Chief Executive Officer
Teleglobe Canada Inc.*

*The Pacific Telecommunications Council's
12th Annual Conference*

Pacific Telecommunications Conference

*Pacific Telecommunications:
Weaving the Technological and Social Fabric*

*January 14-17, 1990
Hilton Hawaiian Village / Honolulu, Hawaii*



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They're Talking About Us ... "INTER COMM 90 promises to be a very useful event, bringing into focus today's major global telecommunications developments and issues. Members of the Pacific Telecommunications Council are looking forward to the congress and exhibition and expect it to be of particular value." Richard Barber, Executive Director, Pacific Telecommunications Council





*Interactive Concepts
Incorporated*

October 30, 1989

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KTEC

Dr. William Brundage
President
Kansas Technology Enterprise Corporation
112 W. 6th Street, Suite 400
Topeka, Kansas 66603

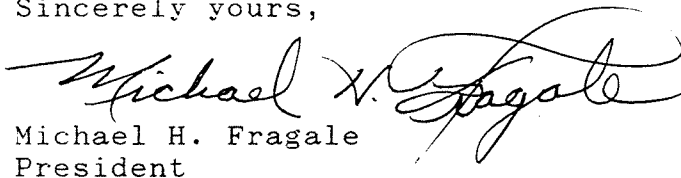
Dear Dr. Brundage:

Interactive Concepts Incorporated wants to thank you for the personal time you and Nelson Kruger spent to be with us Tuesday evening during our teleconference session to Hong Kong. We received very favorable comments from our prospect regarding our product and the individuals who were present.

On Friday, October 27th, we received a fax from our prospect which indicated they are very anxious to purchase one (1) copy of our program immediately. This purchase is outside the Tender they are planning to release mid-November. They are planning to use an Apollo DN 3000 as their workstation platform. Our feeling is that should they acquire this first package, they will be committed to acquiring the remaining packages from ICI. They also indicated that we have satisfied them as regards our commitment to servicing the product and our customer, irrespective of the distance between us.

ICI wants to personally thank you for your foresight and initiative in making this teleconference possible. We feel it was indeed a success.

Sincerely yours,


Michael H. Fragale
President

MHF/dko

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EXECUTIVE SUMMARY

RURAL AMERICA IN THE INFORMATION AGE: TELECOMMUNICATIONS POLICY FOR RURAL DEVELOPMENT

Chapter One: Rural America in the Information Age

For nearly a decade, rural Americans have suffered one of the longest, most severe economic declines in several decades. If it is to survive economically in the 1990s, rural America needs new economic development strategies to grapple with stark new economic realities: the permanent decline of traditional rural industries, the growing importance of information-based services in all economic enterprises, and the untapped potential of new telecommunications services for rural business enterprises.

The structure of the U.S. economy is changing, with services now the most rapidly growing sector. This structural shift is mirrored in the rural economy, where public and private services now dwarf agriculture and manufacturing. Both urban and rural industries are being drawn more and more into the global economy. Yet the shift to services is only part of the change. Information-based activities account for the largest part of the growth in services, and other sectors are becoming increasingly information intensive.

The telecommunications environment has also changed dramatically. Technologies such as satellites, optical fiber, cellular radio and digital microwave have been introduced, and the convergence of computers and telecommunications has turned the telephone networks into information highways. But perhaps

equally important, the telecommunications regulatory environment has also changed. The introduction of competition in equipment, value-added and long-distance services and the breakup of AT&T have resulted in new choices for consumers but also new challenges for rural policy.

Telecommunications can play a catalytic role in rural economic development. Unlike other rural development strategies that target specific industries or regions, enhanced telecommunications can help a broad array of industries in various rural regions. Just as in the past when a new highway or railroad link could boost the fortunes of remote towns, so today modern telecommunications services can help bolster and diversify the economic base of rural America.

Chapter Two: The New Economy of Rural America

Historically, rural economies have thrived because of location-specific advantages; they had the minerals or crops or timber which outside markets wanted. Increasingly, however, new economic development depends on specialized human resources, information processing and telecommunications.

The role of agriculture in rural employment has declined to the point that only nine percent of rural jobs are in agriculture, compared to 65 percent in services, 17 percent in manufacturing and nine percent in construction, mining and other sectors. In the past decade all increases in the number of jobs have been in services.

Few rural communities have diverse economies. Many are largely dependent on a single industry or single major employer. What rural economic growth has occurred in the 1980s has taken place primarily in counties adjacent to metropolitan areas and in counties with amenities to attract tourists or retirees.

The emerging telecommunications technologies can help rural areas better cope with the special problems of rural economies—geographic isolation and economic specialization. They are well-suited for the “post-agricultural” diversity of rural America, which is growing increasingly resistant to sector-specific remedies.

Chapter Three: Telecommunications and the Rural Economy

Investments in telecommunications yield myriad economic and social benefits to other industries, state and local government, and the public at large. They can facilitate greater price competition in various markets, eliminate middlemen suppliers, help lower inventory costs, facilitate timely delivery of perishable products, reduce the need for travel, and attract new industry.

Recent studies have demonstrated that investment in both business and residential telecommunications contributes to economic growth, with the greatest benefits occurring in the most remote areas. Much of the economic benefit occurs through indirect effects (called “externalities” by economists) that are not captured by telephone company charges. Therefore, additional government incentives may be essential to stimulate telecommunications investments needed for rural economic development.

Telecommunications and the information services made possible by telecommunications are becoming increasingly critical factors in agriculture and manufacturing, and particularly for service businesses. Telecommunications facilities provide essential infrastructure, like transportation and electrification, without which economic development is blocked. Nevertheless, telecommunications investment by itself does not guarantee economic growth. Development depends on the uses made of telecommunications services by rural businesses, residents and government agencies.

Chapter Four: Telecommunications Policy Issues Affecting Rural America

The 1980s have been a time of dramatic transition in U.S. telecommunications policy, as the FCC has steadily deregulated markets and encouraged greater competition. The breakup of AT&T has sent shock waves through the industry. Small rural telephone carriers, surviving on the fringes of the national

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telephone network, compare their plight to that of the last person in the children's game of "crack the whip"; policies that ripple past those in the middle of the market have exaggerated whip-lash effects on those at the end.

Rural areas benefitted from the prior regulated monopoly through internal cross-subsidies that transferred some of the costs of rural service to urban subscribers. Now, telecommunications competition is creating pressure for every route and service to pay its own way. Without carefully planned transition policies, the longstanding policy goal of providing everyone with affordable POTS, "plain old telephone service," could be threatened, especially in rural areas.

Other regulatory initiatives may add costly new burdens and uncertain benefits to rural telephone users. These policies include price cap regulation, telecommunications ownership regulations, and open architecture standards. Rural America needs help in dealing with the side effects of policies crafted primarily for a competitive urban environment. Rural America also needs help to ensure that urban areas are not the only beneficiaries of the new telephone policies.

Chapter Five: A Portrait of the Telecommunications Infrastructure in Rural America Today

The long-standing policy goal of universal telephone service is nearing achievement. Most of the remaining unserved households in the U.S. lack service because of poverty rather than geographical location. For the remaining locations too distant to be served economically by conventional wireline telephone technology, radio and satellite technologies are now available to complete the mission. Assuming continued availability of Rural Electrification Administration financing, most of the remaining multiparty rural telephone services should be upgraded to single-line service by the mid-1990s.

At current rates of upgrade, it will be more than 25 years before rural telephone switches are upgraded to digital capability, which is needed to provide rural areas with services compa-

able to those already available in most urban areas. An increase of approximately 30 percent in REA lending authority for the next ten years may be sufficient to meet a goal of completing the upgrade of rural switches by the year 2000 and to make available additional rural telecommunications services. This estimate assumes that REA capital financing assistance is sufficient to help the smaller rural telephone companies and that the FCC provides regulatory incentives for the Bell operating companies and larger independent telephone companies to upgrade their facilities and service offerings.

Chapter Six: Policy Goals and Recommendations

Times have changed since those first telecommunications visionaries made their commitment to universal service, a goal that has nearly been achieved. Rural economies have undergone wrenching declines and the national and global economies have become more service-based and information-intensive. Amidst all this change, rural telecommunications policy has not kept pace.

It is clearly time to revisit and reformulate the goals for telecommunications policy. There are three primary reasons for government leadership in forging new rural telecommunications policies:

- To spur new economic development and efficiencies by helping provide a basic telecommunications infrastructure;
- To help rural America adjust to the new telecommunications marketplace by way of special transition policies; and
- To empower rural communities with opportunities to participate in the national economy comparable to opportunities available to urban communities.

Goals

A primary goal of an overall rural economic development policy should be:

Encourage rural telephone carriers to provide affordable access to telecommunications and information services comparable to those available in urban areas.

Specifically, federal and state policy should strive to:

1. Make voice telephone service available to everyone.
2. Make single-party access to the public switched telephone network available to everyone.
3. Improve the quality of telephone service sufficiently to allow rapid and reliable transmission of facsimile documents and data.
4. Provide rural telephone users with equal access to competitive long distance carriers.
5. Provide rural telephone users with local access to value-added data networks.
6. Provide 911 emergency service with automatic number identification in rural areas.
7. Expand mobile (cellular) telephone service.
8. Make available touch tone and custom calling services, including such services as three-way calling, call forwarding and call waiting.
9. Make voicemail services available via local phone calls.
10. Help rural telephone carriers to provide the telecommunications and information services that become generally available in urban areas.

Recommendations

To achieve these goals, the following ten policy recommendations should be implemented:

1. Congress should update and expand the REA's mission to include fostering affordable rural access to the basic communications tools of the Information Age. Specifically, the REA should be mandated to provide loan funds and technical assistance to authorized rural carriers in order to make available to rural residents and businesses all of the telecommunications services that are generally available in urban areas.

2. Congress should increase the REA's lending authority by about 30 percent (approximately \$150 million per year) to accelerate the conversion from analog to digital telephone switches in rural America and to help provide rural residents with access to voice, data, video and mobile services comparable to those available to urban residents.
3. The FCC should continue its support of rural telecommunications by maintaining nationwide long-distance average rate schedules. It should also continue to authorize "lifeline" and "universal service" funds out of interstate long-distance revenues. It should encourage the expansion of competitive long-distance services by permitting local exchange carriers to initiate upgrades to equal access facilities.
4. The FCC should encourage the development of video and other information services in rural areas by broadening the waiver of cable television and telephone cross-ownership restrictions in rural areas.
5. The FCC should offer incentives for the Bell operating companies and larger independent telephone companies to prepare and implement plans to upgrade completely their rural facilities by the year 2000 to provide their rural service areas with all telecommunications services generally available in urban service areas.
6. The Justice Department should recommend to Judge Harold Greene, in connection with the AT&T consent decree, that BOCs be given waivers or other incentives sufficient to induce them to provide infrastructure and gateways for information services in their rural areas comparable to those available in urban areas.
7. All federal agencies involved in rural development programs should include telecommunications planning and coordination and authorize funding for telecommunications services as part of their programs.
8. State PUCs should encourage telephone carriers to offer new information services by permitting accelerated cost recovery accounting on obsolete equipment not suitable for modern services.

9. State development and social service agencies should include telecommunications issues within their planning agendas, and should request their PUC to remove any state regulations that inhibit deployment of new telecommunications facilities appropriate for rural development.
10. State governments that have not already done so should establish a centralized telecommunications policy office to assist all state agencies in telecommunications planning and to help coordinate policy among various state agencies, including the PUC.

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Video Telecommunications for Regents Institutions
Remarks for the Legislative Educational Planning Committee Panel
October 2, 1989

by

Barbara P. Paschke
Associate Director of Academic Affairs
Kansas Board of Regents

This past academic year, Regents institutions offered nearly 2,500 off-campus courses, programs, workshops and conferences in roughly 80 locations throughout the State of Kansas. Most of these were taught by faculty who traveled to the off-campus site, sometimes only as far as the nearest high school and sometimes, for a professor who traveled from Hays to Garden City, 280 miles round-trip.

Given the number of off-campus activities and the travel time involved, it is not surprising that Regents institutions have an interest in televised instruction. The Regents Educational Communications Center (RECC) is a recent manifestation of this interest. The Center, which is being built on the Kansas State University campus with \$6 million in federal funds, is already producing programs which are transmitted to the public schools via satellite. The RECC provided federal funds to help fifty-two schools purchase downlinks necessary to receive these broadcasts. About eighty school districts in Kansas can now receive broadcasts from the Center.

Although KSU has the only Regents satellite uplink facility, other Regents institutions also offer televised credit instruction. Wichita State University is offering twelve credit courses to approximately 600 students this fall over WSU 13, the cable station which the university operates in Wichita. Emporia State University, Pittsburg State University and Fort Hays State University each operate a cable television station which they use to deliver credit instruction, and Fort Hays also purchases broadcast time on public and commercial television stations in order to reach beyond the cable subscriber audience. The University of Kansas Medical Center uses a microwave system to connect with the Veterans' Administration Hospital in Kansas City, Missouri for conferences and instruction. The University of Kansas recently acquired a license to construct low power television transmitters at Lawrence, Overland Park, and Bonner Springs which will be used to deliver courses from the Lawrence campus to the greater Kansas City metropolitan area, including the Regents Center.

Recently, Regents institutions have joined the burgeoning excitement over fiber-optic cable, a communications medium which can provide the broadband communications necessary for two-way audio and video communications. Satellite and cable broadcasts can transmit audio and video signals to the student, but telephone lines are used when students want to speak to their instructor. Students may adapt to this limitation more readily than instructors, who cannot see the students they are teaching. Fiber enables students and faculty to see and hear one another, the transmission quality is high, and in instances where it is difficult to obtain an FCC license for other kinds of transmissions, fiber provides a viable alternative. The same fiber network can be used for videoconferencing, which saves travel time and costs, and for medical consultation and diagnosis, which provides access to specialized medical care in rural areas and small towns.

Last winter, the University of Kansas sought assistance from the Division of Information Systems and Communications (DISC) in developing broadband video communications between Lawrence and Kansas City. A microwave license proved more difficult to obtain than expected, and the University asked DISC for assistance in exploring other options. DISC found that although fiber optic cable exists in many parts of the state, rates to use it for full-motion video transmission were prohibitive.

Thus, the Regents, the Department of Education, DISC, and Kansas Technology Enterprise Corporation (KTEC) began a series of meetings with the telecommunications providers in an effort to find ways in which we could work together to use and develop broadband video communications in Kansas on a cost-effective basis. For example, Regents institutions might be able to engage in joint research projects with communications vendors resulting in tangible benefits to the vendors which could be used to justify pricing on an incremental rather than a full-cost allocation basis.

It is probably important at this point to explain the difference between full cost and incremental pricing. When rates are based on full-cost allocation, users pay a percentage of the full-cost of the investment required to provide the service. This is analogous to my driving to Lawrence from Topeka, which will cost me approximately \$1.75 in gas and tolls. If two friends ride with me, my fuel costs will probably rise slightly, perhaps bringing my costs to \$2. If I were to seek reimbursement based on a full-costs allocation, I would divide the cost of the trip between the two passengers, each paying fifty percent, or \$1 each. But I could charge my passengers only the additional, or incremental cost of providing them with a ride --- in this case, the additional 25 cents in fuel. In other words, the method or formula I use to establish rates for passengers is a decision on my part. For telecommunications rates, this decision is made by the Kansas Corporation Commission.

The Kansas Telecommunications Consortium, which Nelson Krueger will describe for you, emerged from these early efforts to find solutions to the cost barriers. Cost is not the only barrier, however. To use and develop a fiber network in Kansas will require cooperation and planning among users and providers of these services. Profit, the tangible incentive for providers, must be balanced with cost-effective rates, the tangible incentive for users.

In addition to working with the Kansas Telecommunications Consortium, a Regents Technical Issues Subcommittee has written a Long Range Technical Plan for Instructional Telecommunications. The plan, which will be presented to the Board at its October 1989 meeting, seeks to interconnect existing and developing broadband communications systems in the state so that the resources of Regents institutions can be distributed throughout Kansas. The plan does not recommend any one communications medium over another; rather it emphasizes the need to establish a video communications network and to do so cooperatively with other state agencies and the private sector. The resulting network is very likely to include several media. For example, fiber optic cable could transmit a signal from Emporia State University to the uplink at Kansas State University, where the signal could be transmitted via satellite to cable stations which, in turn, could distribute the signal to their subscribers. This is similar to the way long distance calls are transmitted today using a combination of copper wire, microwave, fiber, and satellite.

To build a network which links existing pieces together and fills in the gaps will require cooperative planning and cooperative implementation. The Regents active participation in the Kansas Telecommunications Consortium is an effort toward cooperation in these areas, but rate structures and regulations may need reexamination before Kansas can develop a state-of-the-art video telecommunications network that will expand opportunities for Kansans in many areas.

Independent Telephone Company
and Regulatory Involvement
in Two-Way Interactive Instructional TV

Presented to the Conference on
Post Secondary Education

by
David Brevitz
Director-Regulatory Affairs
Kansas Consolidated Professional Resources
Topeka, Kansas

October 2, 1989

Independent Telephone Company
and Regulatory Involvement
in Two-Way Interactive Instructional TV

I. Business Perspective of Telcos on New Services

- a. Telco's - interested in broadening communications services via new technology
 - great potential for new, enhanced services
 - Instructional TV projects involving Crow-Kan Telephone/Greenbush Educational Cooperative, and Pioneer and Elkhart Telephone/High Plains Educational Cooperative (referenced as "SE and SW Kansas projects") are great examples
- b. Current and continuing business issue for telcos, nationwide--marketing these new services
- c. Breaking the "chicken or egg" circle
 - Many in the telephone industry foresee great numbers of new services made feasible by new telecommunications technology. One general example of a type of new service is dial-up data bases, where a customer can bank by phone, make airline reservations, shop at home, check stock prices, etc. These and other types of services, feasible with new technology, are not broadly understood or accepted by consumers yet.
 - But a lot of customers have not been "educated" or sold regarding the new services, or what their benefits might be. Thus the benefits of new technology are not clear.
 - Again, educational TV projects are great examples of customers and telcos coming together to define and meet customer needs with new technology. This is one fundamental breakthrough where a new service made available by new technology has been provided by telephone companies, to meet "customer demand".
- d. Continuing goals of telephone companies
 - keep customers on the public telephone network it's generally better to meet customer needs in a timely fashion, rather than leave building a private network as the only option for that customer to meet his needs
 - keep the telephone network technologically up-to-date via continuing modernization--this can aid in meeting customer needs
 - broaden the number and types of uses customers can make of the telephone network--the greater is its value and benefit to customers - the greater the affordability of all services
 - This critical point is embodied in the KTEC Telecommunications Consortium Mission Statement, where it refers to network use by
 - business
 - education
 - health care
 - government

(KTEC is the Kansas Technology Enterprise Corporation, a non-profit corporation supported by state funding)

II. Regulatory Implications of Instructional TV projects

1. The KCC has concern that new technology and facilities installed by any utility could cause rate increases. (This does not appear to be a serious concern in the SE/SW Kansas projects.)
2. The KCC held that the SE and SW Kansas projects involve a service offering subject to KCC regulation, review, and approval.
3. Pricing of telephone services has been an issue at the KCC for some time
 - main telecommunications objective of KCC is "Universal Service"
 - key to this in terms of pricing is to keep rates for basic local service reasonable, so that telephone service is affordable
 - local service is subscribed to by 94% of Kansas households
 - one way to keep local rates lower is to keep rates for other services higher
 - in regulatory debates over service pricing, two main pricing methods are often advocated, both based on economic theory
 - incremental costing
 - fully distributed costing (FDC)
 - Kansas Corporation Commission has used fully distributed costing
 - as a consequence rates for some services (such as long distance services) are higher than they would otherwise be, local service rates are lower
4. Requirement that new services be priced to recover FDC costs instead of a lower cost base (such as incremental costs) means higher prices, which can impede customer acceptance of new services.
5. KCC needs to be flexible regarding pricing of new services
 - not require them to be priced at FDC in all cases, but something less
6. "Flexible pricing" can be a tough balancing act - but the KCC is working on it
 - the best indication of that is the KCC's fast, positive action on the SE/SW Kansas Educational TV projects
7. This description of Incremental vs. Fully Distributed pricing may sound pretty antiseptic, but it has been a major regulatory issue for years, and will continue to be.
8. Conclusion

I am optimistic regarding the outcome of regulatory decisions on pricing telecommunications services. I anticipate the KCC will continue to balance policies to achieve several objectives.

- reasonable rates for all services, including basic local service
- a modern telecom network
- introduction of new services
- economic development in the state and its communities

Prices for some new services will tend toward incremental costs rather than FDC.

GTE Test Offers View of Video Future

Optical Fiber Boosts Services To Subscribers

By WILLIAM M. BULKELEY

Staff Reporter of THE WALL STREET JOURNAL
CERRITOS, Calif. — If all goes as planned, a select handful of people in this upper-middle-class suburb of Los Angeles will move into the video world of the future in the next few months.

No longer will they have to settle for "Out of Africa" because "Police Academy III" is out of stock at the local video-rental store. Instead, they will be able to have the movie of their choice transmitted right into their TV sets.

They also will be able to connect their telephones with their video cameras and television sets to create picture phones. They will be able to set up video cameras to monitor a sleeping infant from a neighbor's house. And within a few years, they will be able to video-shop from a Sears, Roebuck & Co. catalog.

It's all due to an experiment by GTE Corp., the Stamford, Conn., telecommunications company. GTE is wiring Cerritos with an optical-fiber cable-TV system that can carry almost unlimited amounts of information right to a television set.

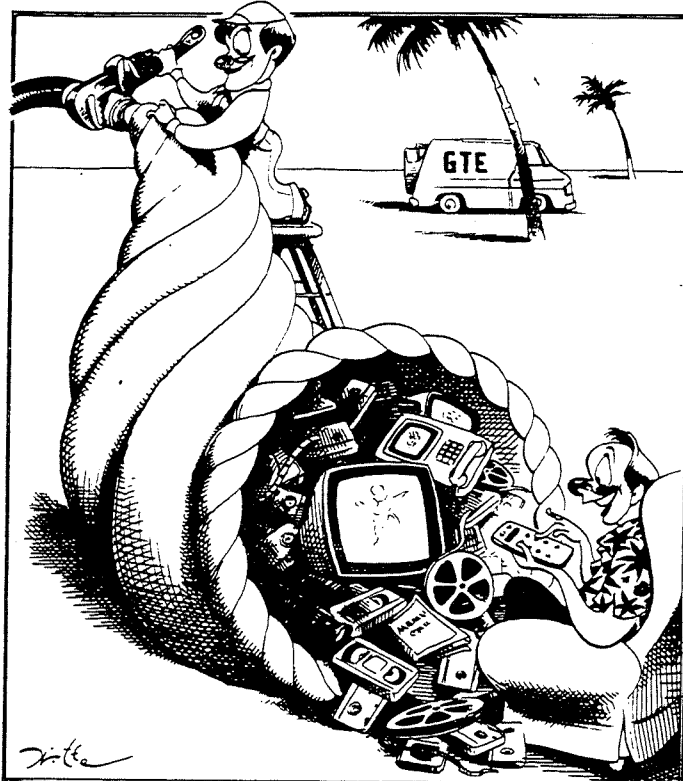
A Closely Watched Experiment

The experiment will be closely watched, not just for what it will do for users but for what it will do to competitors. GTE scientists in Waltham, Mass., have gleefully posted snapshots of six Cerritos video stores on a wall; they expect to drive them out of business someday. Cable-television operators, whose services pale in comparison, may face similar difficulties.

Technologically, the GTE scientists are confident they can come through with all the services planned for Cerritos. Unlike the coaxial cable used in standard cable-TV operations, optical-fiber cable can handle a vast number of audio and video signals. The expanded capacity means that anything regular cable-TV services can offer consumers, an optical-fiber service can, too—and much more besides.

Still up in the air, however, is a more fundamental question, one that the Cerritos project is designed to help them answer, says James F. Sorce, a manager in GTE's labs: "What do you really want when you sit in front of the TV?"

"Fiber networks make possible a whole



Michael Witte

roster of services that have been either impossible or prohibitively expensive before," says Jack Ryan, an analyst with *Electronicast*, a San Mateo, Calif., research firm. GTE is "trying to understand what ordinary Americans will do when confronted with such a choice."

The Cerritos experiment will help the company figure out which services are the most popular and which will bring it the most money.

Other companies also are trying to answer these questions, by installing optical-fiber cable systems of their own in several cities, including London; Regina, Saskatchewan; and Mitaka, Japan. But these are less ambitious efforts. "As far as we know," says Thomas Gillett, GTE's director of advanced-operations testing, the Cerritos project "is the most exotic experiment of its kind in the world."

Currently, optical fiber is used mostly by the telephone companies, to shuttle

large volumes of calls between their main control centers. It hasn't been run into individual homes because optical fiber is more expensive than the copper wire now in use, which is also why cable-TV operators don't use it in place of coaxial cable. But costs are falling, and GTE believes that the time is right to see how users in the home will react to the innovations an optical-fiber system permits.

The Federal Communications Commission normally doesn't allow telecommunications companies such as GTE to operate cable systems in areas where they already do business. It made an exception in the case of the Cerritos experiment, but once the operators of standard cable-TV systems got wind of it, they mounted a protest, which the FCC has agreed to hear. A ruling is expected next month.

The project got its start three years ago, when GTE agreed to help fund a cable-TV system for Cerritos's 56,000 citi-

zens. In return, GTE researchers get to experiment with fiber-optical cable. And assuming that the FCC approves the project, five homes in the area soon will be given refrigerator-sized cabinets full of electronics that convert optical signals to voice and video.

When the system goes into operation, most people will only get standard cable-TV service. In addition, GTE is going to give them what it calls "near-video-on-demand." This movie service is similar to pay-per-view movie services, but instead of a particular film being available only three or four times a day, it will be available every 15 minutes, on different cable channels.

The five households with optical fiber, however, will get a movie service that's even better: They will be able to receive almost any movie they want, at any time they want it. If a teen-ager wants to watch "Top Gun" at 3:52 p.m., no problem. GTE won't say what it plans to charge per movie; indeed, one of the experiment's goals is to find out what the market will bear. (One researcher says a recent private survey puts the figure at \$10.)

A central GTE office will be outfitted with five videocassette recorders, and each time a user orders a movie, a worker will load a VCR with that movie and start the machine. But GTE is still trying to figure out what it will do when there are, say, 5,000 users linked to the system. Stephen Walker, GTE Labs' manager of video techniques, jokes that "one of our images is of a high school student on a skateboard whizzing around" loading VCRs.

GTE researchers also are still working on ways to make the system easy to use. For instance, they want users to be able to stop a movie in mid-view, just as they can a VCR. In addition, they are trying to design a remote-control device that's as simple to operate as those made for TV sets.

Movies-on-demand aren't the only thing optical fiber will make possible over the next few years. Users will also be able to order particular programs they normally couldn't receive. For example, Spanish-language programming often isn't included in cable systems with few Spanish-speaking subscribers. Mr. Gillett says that optical fibers make it possible for viewers to order the central office to pick a Spanish-language program off a satellite and ship it directly to the home.

Other services will be more personal. Since the video signals can be sent from a video camera in one home to a TV set in another, users can create their own picture telephones. This would allow a grandmother on one side of town to watch a grandchild's birthday party on the other. The video signals can also be switched among televisions within a house, which means that a couple with a VCR in their living room will still be able to use it to watch a movie in their bedroom.

Dog Licenses and Parking Permits

The City of Cerritos, meanwhile, is planning to develop services that will let people use the system to register to use its tennis courts, sign up for recreation programs and get dog licenses or temporary parking permits.

Home shopping will be easier than ever. Says Mr. Gillett: "You can sit in your easy chair with a glass of wine in one hand and the hand-held remote in the other" and place orders using the remote instead of the telephone. He expects this service to become available within the next two years, with Sears Roebuck as one of the first companies to sign on. GTE also expects that users eventually will be able to

January 12, 1990



President Bill Brundage
Kansas Technology Enterprises Inc.
112 West 6th Street
Suite 400
Topeka, Kansas 66603

Dear President Brundage,

The administration of Hutchinson Community College would like to apply for grant funds. These funds would be utilized towards implementing interactive video CODEC (coder-decoder) equipment that could serve local business and educational purposes.

Preliminary research reveals that much forethought must be used in choosing CODEC equipment in order to ensure adequate quality and compatibility with other CODEC sights. Hutchinson Community College has much experience in video, networking, fiber-optics, and telephony. The Hutchinson campus already operates an extensive video, telephone, microwave, and fiber-optic network. Our expert staff and exceptional facilities would allow us to implement a CODEC system and deliver quality services to the community of Hutchinson and the rest of our service area.

Based on present information available, it is evident that between \$30,000 and \$50,000 would be required to successfully obtain and implement a CODEC-based interactive video system on the campus of Hutchinson Community College. The system would be integrated into an existing video production and telephone network so that the full functionality of the equipment can be realized. It is also the intent to position the proposed CODEC system such that it might interface with future local and wide-area fiber-optic networks.

The administration recognizes the significance of fiber-based interactive television networks and the functionality of CODEC equipment for enhancing communications. Furthermore, Hutchinson Community College is dedicated to exploring the educational and developmental capabilities of interactive video.

Sincerely,

A handwritten signature in cursive script that reads "James H. Stringer".

Dr. James Stringer, President
Hutchinson Community College

Kansas Technology Enterprise Corporation

Special Project

Proposal
for
Kansas Telecommunications Consortium

Beginning September 1989

VI. Budget	KTEC (\$)	Other (\$)
Personnel Part-time director to chair consortium	\$20,000	
Secretarial	5,000	
Travel	6,000	
Communications	3,100	
Supplies	500	
Furniture	1,000	
Rent	2,785	
Projects	15,000	\$100,000
Strategic Plan		\$50,000
Consulting		\$100,000
Totals:	\$53,885	\$250,000

TOTAL: \$303,885

VII. **Project Period**

September 1, 1989 - August 31, 1990

I. **History**

September 1988--Southwestern Bell assigned Gayle Gordon to KTEC to assess the feasibility of switched broadband video use by Kansas businesses. (This is switched voice, data and video transmission that offers the opportunity for on-demand interactive services that could save businesses thousands of dollars in travel expenses.). Kansans would be able to communicate instantly and effectively any place in the world. Furthermore, they must be able to do so in a cost-effective manner.

Initial research into the project led to the realization that education, health care, and government should be involved also. As the key to tomorrow's economic future, technological innovation will come from the partnerships formed between government, education and the private sector. Thus the seed for creating the Kansas Telecommunication Consortium.

In the Spring of 1989, the Consortium was firmly established in response to the need for development of a coordinated strategic plan for Kansas that will eventually lead to a state-wide, state-of-the-art telecommunications system. Providers and users have joined together to develop this plan. We are proceeding with what is logical and affordable.

The first meeting of the Consortium was held at United Telephone Company, Midwest Division offices on May 12, 1989.

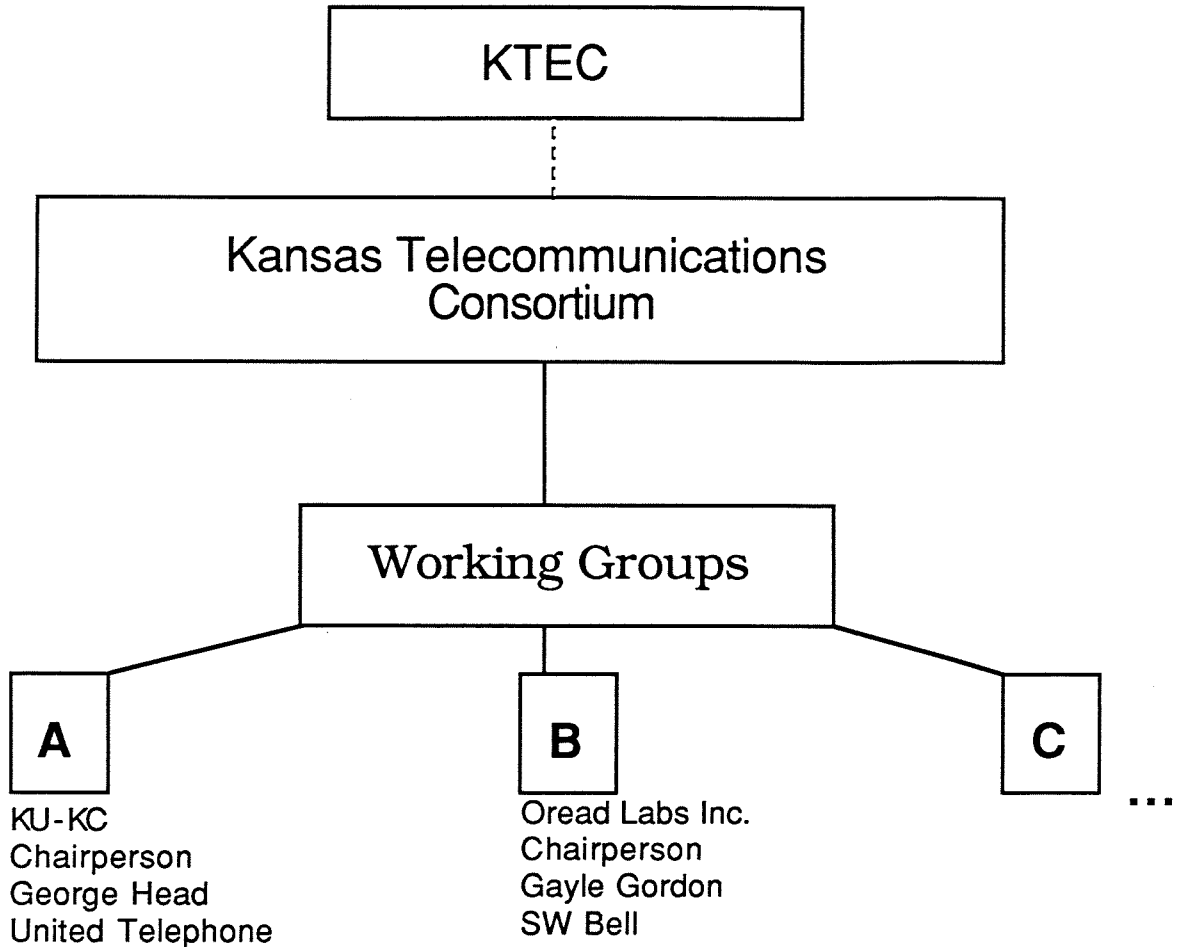
The following providers and users are members of the consortium: Southwestern Bell, United Telephone, Kansas Consolidated Professional Resources, A.T. & T., U.S. SPRINT, KTEC, Kansas Board of Regents, Kansas Department of Education, and Kansas Division of Information Systems. The users list is expected to expand.

On June 30, 1989, the Consortium members met with the Joint Committee on Economic Development. Consortium members emphasized to the Committee that they are vitally interested in providing Kansas businesses, health care, providers, education and government with the advantages that current telecommunications technology offers. Telecommunications is essential for our state to be successful in its economic development efforts.

Through a sharing of knowledge, members of the Consortium are identifying fiber networks currently existing in Kansas, and those planned for the near future. Our examination has determined that no mechanisms now exist which engage these networks to serve the best interest of the State in a cost-effective manner. The video transmission capabilities of fiber offer a variety of opportunities to meet the business, educational, government and health care needs in the state.

By selecting demonstration projects (currently in process), the Consortium intends to determine what technologies work, which are acceptable to the users and how to make the technologies cost effective. We are simultaneously conducting market analysis, cost analysis, and technology analysis to determine the true market value and potential value to Kansas.

II. **Organizational Chart**



Consortium Membership

Providers:

- Southwestern Bell
- United Telephone
- Kansas Consolidated Professional Resources
- A.T. & T.
- U.S. SPRINT

Users:

- KTEC (rep. the private sector)
- Board of Regents
- Department of Education
- State Division of Information Systems

III. **Mission Statement**

The Kansas Telecommunications Consortium, representing education, government, health services, and private businesses, declares its mission to establish an accessible, cost-effective, state-of-the-art video telecommunications system throughout the State of Kansas.

This public-private economic development Consortium will share expertise, conduct technology, application and marketing analysis, and summarize the results in a strategic plan.

IV. **Goals and Objectives of the Consortium.**

- A. Identify all provider and user groups
- B. Identify and locate existing fiber systems that are available in the state
- C. Establish a series of demonstration projects with businesses, public schools, Regents' Institutions, and the medical community. These projects will provide the data for technology assessments, application assessments, and economic assessments
- D. Produce a strategic plan

V. **Economic Impact on State**

Today's global economy requires businesses to have the capability of instant visual and data transmission with clients and associates on a worldwide basis. A business no longer needs to be located in New York City to have these capabilities. In the economic interest of Kansas, KTEC must address the infrastructural requirements of advanced technology businesses and companies that utilize these technologies.

It is a fact that today's information-based global economy requires state-of-the-art telecommunications. The basic facilities, equipment and logical step-by-step planning for a state-wide system falls clearly within KTEC's commitment to the expansion of Kansas enterprises. Through this technology, Kansas firms can expand their markets and thus create new jobs.

VI. **Proposal**

KTEC proposes to fund the management component of the Consortium, including the employment of a part-time director to chair the Consortium and the initial support functions required by the Director. In addition, KTEC proposes that \$15,000 be earmarked for initial demonstration projects; this will be enhanced by other members of the Consortium funding \$100,000 for special projects, \$50,000 for developing of a strategic plan, and \$100,000 for consulting. The intent is to develop a state-of-the-art telecommunications system for the expansion of Kansas enterprises and technology.



KANSAS
TECHNOLOGY
ENTERPRISE
CORPORATION

For Immediate Release
Sept. 6, 1989

For more information contact:
Janie Rutherford, (913) 296-5272

Topeka, KS--The Kansas Technology Enterprise Corporation is pleased to announce that Nelson L. Krueger, Lawrence, has been named Director of the Kansas Telecommunications Consortium effective September 1, 1989.

In 1988, the Consortium was established to develop a state-wide, state-of-the-art telecommunications system. The feasibility of switched broadband video use by Kansas business, education, government and health care officials would allow Kansans to communicate instantly and effectively any place in the world.

Providers and users joined together to develop this plan, including Southwestern Bell Telephone, United Telephone (Midwest Group), A.T. & T., U.S. Sprint, and Kansas Consolidated Professional Resources, the Kansas Board of Regents, the Kansas Department of Education, the State Division of Information Systems, and the Kansas Technology Enterprise Corporation, representing the private sector.

As Director of the Telecommunications Consortium, Krueger will oversee the market analysis, cost analysis and technology analysis currently underway, and will be instrumental in developing a strategic plan for the Consortium.

A 20-year veteran pilot for TWA, Krueger was named Manager of TWA's Flight Operations Communications in August 1989. He will continue his association with TWA.

His list of contributions to Kansas and the Nation include serving as Kansas Administrative Assistant for Senator Bob Dole from 1974-76, with the areas of transportation, energy, and rural issues as his primary responsibilities.

From 1982-87 Krueger served as the Regional Representative for Region VII to the U.S. Secretary of Labor by appointment of the President. In that role, he served as a direct extension of the office of the Secretary and provided liaison to Governors, State and local officials and members of Congress.

Krueger holds Bachelor of Science and Master of Science degrees in business administration from Fort Hays State University (FHSU). He was selected for membership to both the Sigma Phi Sigma National Physics Honor Society and Phi Kappa Phi Academic Honor Society. He has served as a board member of the FHSU Alumni Association and will receive an Alumni Achievement Award at FHSU's Homecoming activities in October.

Krueger and his wife, the former Judy Haigler of Hays, live in Lawrence.

KTEC is a quasi-public, non-profit corporation established by the State of Kansas in 1987. To stimulate innovation and its commercial-ization, KTEC: finances collaborative research and technology transfer between academic institutions and industry; finances Centers of Excellence for basic and applied research and technology transfer; provides seed capital financing for new and emerging technology-based Kansas industry; provides matching grants for the federal SBIR Program, provides technical information and referral services to new, emerging or mature businesses; and works to attract research and development facilities and programs to Kansas.

-30-

**Mike Hayden, Governor
Budget Message
January 1990**

*The Kansas
system of higher
education ranks
among the
finest in the
United States.*

Interactive Video

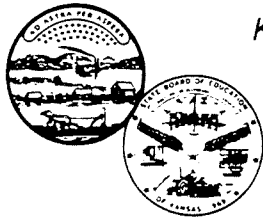
A common denominator in most of these proposals is the concept of interactive video, one of the most advanced technologies in the communications revolution. This technology would allow school districts to offer advanced courses which otherwise would have been exceedingly difficult or impossible to provide. It may also be used to offer early childhood services to help train parents as teachers, support services for disabled students, and expand counseling resources and drug abuse education.

The expansion and enhancement of the State's existing interactive video capabilities would yield many benefits in fields beyond education, such as economic development, health care and public safety.

Therefore, I will ask the Commissioner of Education to appoint a task force to devise a statewide plan for interactive video development and oversee existing programs in this area.

I'm proud to announce Kansas will be the first state in the nation to have an Education Technology Fair on interactive video to be held in the state's capitol on February 15.

Kansas Fiber-Optic Communication and Instructional System



Kansas State Board of Education

Kansas State Education Building

120 East 10th Street, Topeka, Kansas 66612-1103

Lee Droegemueller
Commissioner of Education

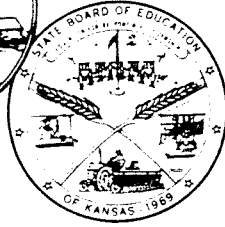
October 1989



Kansas State Department of Education

Kansas State Education Building

120 East 10th Street Topeka, Kansas 66612-1103



November 14, 1989

TO: Fiber-Optics and Technology Fair Planning Committee

FROM: Lee Droegemuller
Commissioner of Education

SUBJECT: February 15, 1990--Legislative Committee Hearing

We appreciate your taking time to attend the meeting today concerning a two-way interactive video demonstration before the Senate (1:30 p.m.) and House (3:30 p.m.) Education Committees on February 15, 1990. Attached is a list of persons in attendance for your information.

After a thorough discussion of the issues, it was agreed that a technical subcommittee of the group, chaired by Jerald Jennings, would meet in approximately two to three weeks for the purpose of working out the details of such a transmission between the Southeast Kansas Regional Service Center, the Southwest Kansas Regional Service Center, and the State Capitol.

Bill Jones, President of Centrex in Topeka, indicated he would provide the equipment for the legislative committee hearing/demonstration in the State Capitol. Jerald Jennings, DISC, indicated that he, in cooperation with Southwestern Bell Telephone, would insure that cable was available in the State Capitol to provide for the transmission.

The next meeting of this planning committee will be December 18, 1989, 10:00 a.m., Commissioner's Office, 120 East Tenth Street, Topeka. We plan to tie in by telephone Mr. Richard Veech, Pioneer Telephone, and Mr. Pete Hurt, Craw-Kan Telephone.

3-4

FIBER-OPTICS AND TECHNOLOGY FAIR
PLANNING COMMITTEE

John Eger
KTEC
112 W. 6th, Suite 400
Topeka, Kansas 66603

Don Hoven
AT & T
1100 Walnut, Room 1336-2
Kansas City, Missouri 64106

Jerald Jennings
Bureau of Telecommunications
DISC
900 S.W. Jackson
Topeka, Kansas 66603

Nelson Krueger
KTEC
112 W. 6th, Suite 400
Topeka, Kansas 66603

Tony Poole
Opt in America
P. O. Box 18958
Washington, D. C. 20036

Mike Stark
AT & T
1100 Walnut, Room 1325
Kansas City, Missouri 64106

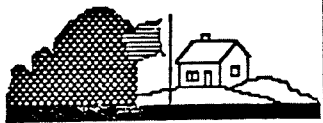
Gayle Gordon
Southwestern Bell Telephone
220 E. 6th, Room 100
Topeka, Kansas 66603

Marianne Hudson
KTEC
112 W. 6th, Suite 400
Topeka, Kansas 66603

Bill Jones
Centrex-AV Systems
126 N.W. Jackson
Topeka, Kansas 66603

C. C. Metzler
Southwestern Bell Telephone
220 E. 6th. Room 100
Topeka, Kansas 66603

Tom Sponamore
Bureau of Telecommunications
DISC
900 S.W. Jackson
Topeka, Kansas 66603



SOUTHWEST PLAINS REGIONAL SERVICE CENTER

P.O. BOX 1010, 306 WEST CARSON, SUBLETTE, KANSAS 67877
HIGH PLAINS



EDUCATIONAL COOPERATIVE

**2-WAY VISUALLY INTERACTIVE
INSTRUCTIONAL TELEVISION NETWORK**

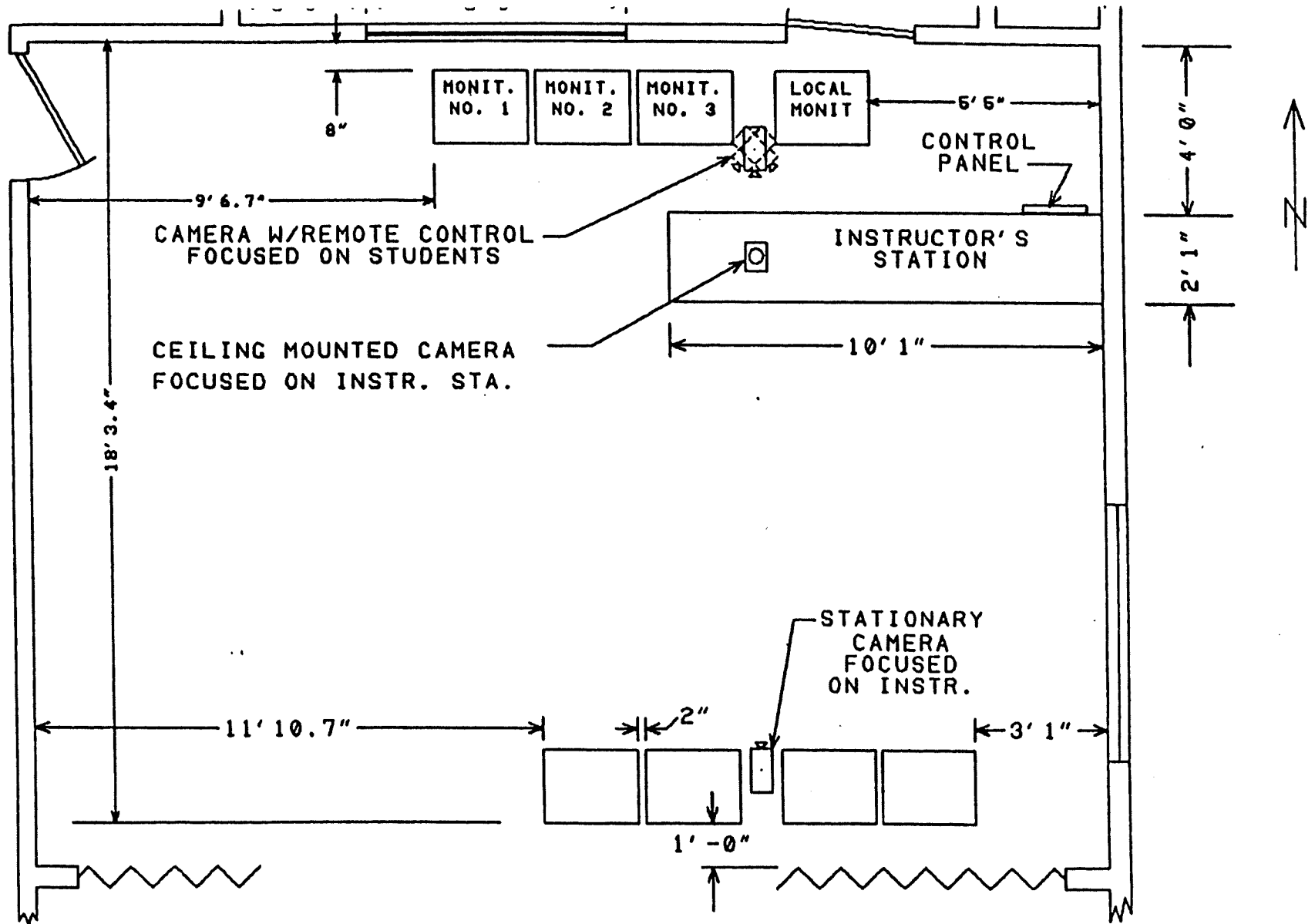
A First in Kansas Public Education

a news release from the Southwest Regional Service Center - Sublette, Ks

The **future is now!** The futuristic communication introduced by Batman, Buck Rogers, and Dick Tracy's two-way wrist radio are incorporated in the 21st Century Technology for ten public school sites in Southwest Kansas. Initial turnup of the **2-way Visually Interactive Television Network** is scheduled for September '89 with full implementation by all ten sites in December. Elkhart USD 218, Rolla USD 217, Hugoton USD 210, Moscow USD 209, Satanta USD 507, Sublette 374, Ulysses USD 214, Lakin USD 215, Deerfield 216, and the High Plains Educational Cooperative #611 are establishing one of the first two Interactive Television Networks in Kansas. This ten school network will be the largest group uniformly connected in the Central United States.

The network is a result of the cooperative efforts of the Pioneer Telephone Cooperative of Ulysses, The Elkhart Telephone Company of Elkhart, and Southwestern Bell Telephone Company, The Kansas State Department of Education, and the Kansas Corporation Commission. Local plans include expansion to Seward County Community College, Ft. Hays State University and the additional nine High Plains Cooperative member schools in the next three years. This combined network will be the largest continuous system in the state with the capability to become the first multi-state network in the U. S. by collaborating with the Beaver County Network in Oklahoma.

3-7

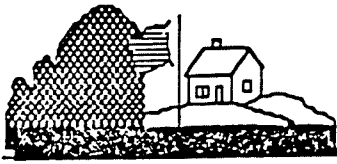


PROPOSED EQUIPMENT LOCATION

TWO-WAY TELEVISION NETWORK	
HIGH PLAINS EDUC. COOP.	
FLOOR PLAN - EQUIP. LOC/ V	
DRAWN BY: CGG	Date: 8-24-89
Scale: 3/8" = 1'-0"	Sh 2 of 4

2-Way Visually Interactive Television is a type of distance learning which allows students and instructors at different locations to see and hear each other simultaneously. **2-Way Video Studio Classrooms** have television monitors in front of the students so they can see and communicate with the instructor and the students in other **2-Way Video Studio Classrooms**. These special classrooms will be connected to each other through fiber optic cable - hair-thin glass fibers which carry light signals for the transmission of interactive video and audio channels simultaneously.

Education programs for both special and regular education will be offered to enhance the local district curricula. Southwest Kansas students will see many benefits of curriculum expansion. The **2-Way Video Network** will enhance local programs in the areas of foreign languages, mathematics, science, humanities and staff development. Districts will have the opportunity to offer advanced language courses, math courses (i.e. calculus, and elementary analysis), and science courses (i.e. marine biology, or anatomy and physiology). Special education students will benefit via 2-Way interaction with possibilities in the areas of speech pathology, assessment, and consultation. By applying this technology the amount of travel time required by educational specialists can be reduced and direct service to students will be increased an extremely important improvement to services in remote rural areas.



SOUTHWEST PLAINS
REGIONAL SERVICE CENTER

P.O. BOX 1010, 306 WEST CARSON, SUBLETTE, KANSAS 67877
Cont. Off. Ph: 316-675-8626 Answer: 316-675-8129

TWO-WAY INSTRUCTIONAL VIDEO
ADMINISTRATIVE COMMITTEE 89-90

FOR THE

HIGH PLAINS EDUCATIONAL

COOPERATIVE

DENNIS THOMPSON - SATANTA

PHIL JOHNSTON - ELKHART

NEIL HAYS - ROLLA

NELSON BRYANT - HUGOTON

BILL JONES - DEERFIELD

DON NELSON - MOSCOW

BRUCE KIENAPFEL - ULYSSES

ERNEST McCLAIN - LAKIN

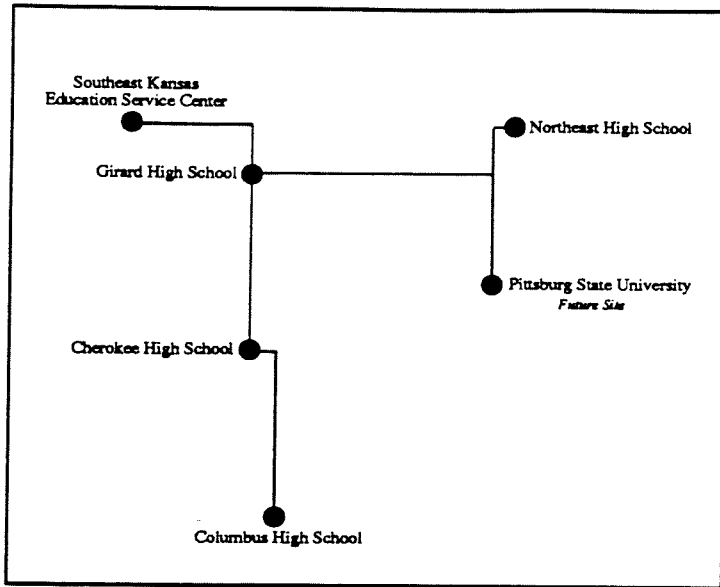
GARY MARSHALL - SUBLETTE

GARY BURKHART - HIGH PLAINS EDUCATION COOPERATIVE #611

The purpose of this committee is to research the options of two-way instructional video and the benefits of this technological programming to the schools in Southwest Kansas.

What's the Connection?

The fibers of education in Southeast Kansas are being strengthened by the INTERACTIVE TELEVISION NETWORK PROJECT. In conjunction with Craw-Kan Telephone



INTERACTIVE TELEVISION NETWORK PROJECT
Current Sites

Cooperative, Inc. and Columbus Telephone Company, Inc., the Southeast Kansas Education Service Center at Greenbush is coordinating the project which is partially funded by the Kansas State Department of Education. The Project utilizes fiber optic cable, made of hair-thin glass fibers, to carry light signals underground, transmitting video channels from one location to another. The result is a telecommunications system which permits students and teachers to see, hear and communicate with one another simultaneously. One interactive television classroom is located in each of the networked districts' high schools and one is at the Southeast Kansas Education Service Center at Greenbush. Television monitors and video cameras in all locations for interactive teaching and learning.

Of course students in Southeast Kansas schools already benefit from interactive teaching and learning in their regular classrooms. The INTERACTIVE TELEVISION NETWORK PROJECT is a way of expanding that learning. Through the project, students are given the opportunity to benefit from classes taught throughout Southeast Kansas and the world. The curriculum is enhanced. The fibers of education in Southeast Kansas are given tensile strength. The student is equipped with the ability to withstand the stress of an increasingly competitive job market without tearing apart. The fibers of education and of economic development in Southeast Kansas are strengthened.

More information on the INTERACTIVE TELEVISION NETWORK PROJECT is available from Southeast Kansas Education Service Center at Greenbush, P.O. Box 189, Girard, Kansas 66743, Phone 316-724-6281, Fax 316-724-6284.

Southeast Kansas Education Service Center



The Southeast Kansas Education Service Center is an organization dedicated to helping provide kids an equal educational opportunity.

The Southeast Kansas Education Service Center at Greenbush

was formed in 1976 and is governed under Kansas statutes as an interlocal agreement. Therefore, the Center has all the rights, privileges and duties of a school district, with the exception of the power to levy taxes. All funds received by the Service Center are provided by schools and other agencies which contract for services.

The Center is governed by a five member board of directors composed of representatives from the Erie, Girard, Riverton and Yates Center boards of education and from Fort Scott Community College board of trustees. The members serve as at-large representatives for all schools which contract for services. School administrators serve on program advisory boards.

Southeast Kansas Education Service Center is Different from Other Educational Cooperatives

The Southeast Kansas Education Service Center will offer any program that two or more districts feel is to their mutual advantage and wish to support. Most cooperatives are single purpose special education agencies which operate on an all or none philosophy. If you belong to the cooperative, then you pay your share of all the programs.

The Education Service Center philosophy is that all programs are voluntary and a district may participate only in the programs needed in their school district. If they choose to belong, they assume their fair share of the program cost.

The primary service area of the Southeast Kansas Education Service Center includes 32 school districts, 2,000 teachers and 32,000 students in nine counties of Southeast Kansas, but 118 of the 304 Kansas school districts contract for some service from the Center. For example, Goodland, Ulysses and 64 other districts participate in our HEALTHY LIVING Drug and Alcohol Abuse Prevention & Human Sexuality Curriculum; Rozel, Coldwater, Sabetha and 102 other districts are members of our Apple Computer bid; Lyndon and Kinsley are members of our Instructional Media Center, as are 70 other school districts representing over 47,000 students.

What's in it for Kids?

• Better Teacher Training

Our staff development programs provide intensive support for the over 8,000 participants in our staff inservice series each year. Inservice ranging from effective teaching techniques to leadership skills for school administrators.

• Cost Effective Management Practices

Our group purchasing program has saved school districts over \$750,000 in the last ten years and our asbestos inspection bid saved districts \$250,000 over the state average bid in Kansas.

• Instructional Media Support

A comprehensive film and video cassette library with over 5,000 films and tapes in all subject areas. A resource that has been developed for over 12 years and is valued in excess of \$2.5 million. A resource which allows a teacher in Altoona access to the same quality media available to teachers in large, wealthy urban areas.

• Low Incidence Special Education

A program for the hearing impaired that keeps our kids at home rather than moving them to Olathe. A program for the vision impaired that uses technology to improve the instructional program for low-vision kids. Another technology program which provides services to children who need augmentative devices to communicate.

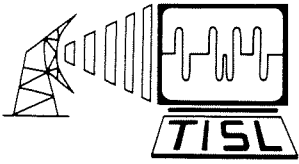
• Substance Abuse Prevention

In addition to being the only school based Regional Prevention Center funded by Governor Hayden, the Education Service Center provides supplemental programming for member schools, such as the Life Education Center Mobile Classrooms—two 36-foot traveling high-tech centers which provide instruction to K-6 students supplemental to their on-going classroom curriculum. These units are front page news wherever they go, reinforcing to the public the effective efforts school districts are making to meet the crisis of drugs in our society.

The Success of any Education Service Center is dependent upon how strongly each person believes in the cooperative spirit under which the agency was formed—the goal of helping to provide an equal educational opportunity for all kids. The Southeast Kansas Education Service Center Board of Directors and each individual employee share some common beliefs which we feel assist us in meeting our goal.

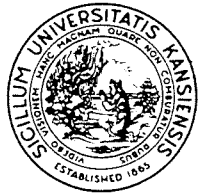
- A belief in being the best at what we do.
- A belief in the importance of each detail of each job.
- A belief in the importance of people as individuals.
- A belief in high expectations, program quality and superior service.
- A belief that most members of our organization should be innovators. That we must be willing to accept and implement new ideas and concepts.
- A belief in the importance of communication, informally and at all levels.
- A belief in, and recognition of, the fact that the growth of the Southeast Kansas Education Service Center is dependent upon the successful job performance of each individual employee.





TELECOMMUNICATIONS AND INFORMATION SCIENCES LABORATORY
The University of Kansas

Nichols Hall - West Campus
2291 Irving Hill Road
Lawrence, Kansas 66045-6929
(913) 864-4832



January 3, 1990

Nelson L. Krueger
Kansas Technology Enterprise Corporation
4308 Wimbledon Drive
Lawrence, Kansas 66046

Dear Nelson,

We have received a positive response regarding the proposal abstract (attached) describing research in high speed networking. This means that we are in the process of writing a full proposal to DARPA. The full proposal is due January 31, 1990. My discussions with DARPA staff clearly indicated that state support through KTEC along with industry support through United Telecommunications/U.S. Sprint will enhance the attractiveness of the effort to DARPA. Note this project will have significant benefits for the state. This project will thrust Kansas to the forefront of telecommunication technology. The project will make Kansas a national center for developing high speed networking technology, a key to the information age. Further, we anticipate that the project will extend beyond the proposed three years.

A major long term effort will follow from this initial project. A small investment by KTEC is an essential component to the leveraging of this project. Only about a 17% contribution is needed for the first year. The technology developed through this project will be of benefit to United Telecommunications/U.S. Sprint. We have been in contact with U. S. Sprint and are optimistic about their participation in this project.

We would appreciate any help you could be toward making this project a reality.

Sincerely yours,

Victor S. Frost, Director
Telecommunications and Information Sciences Laboratory
Associate Professor
Electrical and Computer Engineering

VSF/ss
Attachment

PROPOSAL ABSTRACT

Networking

**DEVELOPMENT OF A TESTBED FOR
EVALUATION OF NETWORK ARCHITECTURES AND
CONGESTION CONTROL ALGORITHMS
IN HIGH SPEED COMMUNICATION NETWORKS**

Victor S. Frost, Director
Telecommunications & Information
Sciences Laboratory
University of Kansas
Center for Research
2291 Irving Hill Road
Lawrence, Kansas 66045
(913) 864-4832
frost%tisl@kuhub.cc.ukans.edu
Technical Contact

Barbara Armbrister
University of Kansas
Center for Research, Inc. (CRINC)
2291 Irving Hill Road
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(913) 864-3444
Administrative Contact

December 1989

Investigators:

Victor S. Frost, Associate Professor
Gary J. Minden, Associate Professor
Joseph B. Evans, Assistant Professor
Electrical and Computer Engineering

OPT IN *America*

THE PUBLIC INTEREST ORGANIZATION FOR THE INFORMATION AGE

NATIONAL CHAIR

John Eger
Former Sr. Vice President
CBS

PRESIDENT

Reese Schonfeld
Founding President
Cable News Network

EXECUTIVE DIRECTOR

George DeBakey
Executive Director (1987-1989)
ADAPSO

NATIONAL COMMITTEE

The Hon. Greg Sparrow
Past Chair, Committee on
Transportation & Communications
National Conference of Mayors

Benjamin Hooks
Executive Director
NAACP

William Harley
Past President
National Association of
Educational Broadcasters

The Hon. Harrison "Jack" Schmitt
Astronaut
U.S. Senator (1977-1983)
State of New Mexico

Roy Orr
Past President
National Association of County
Officials

Dr. Linus Wright
U.S. Under Secretary
of Education (1987-1989)

Ronald Bornstein
Past President
National Public Radio

The Hon. Lee Dreyfus
Governor (1978-1982)
State of Wisconsin

Clay T. Whitehead
Former Director
White House Office of
Telecommunications Policy

Charles "Bud" Wilkinson
Former Football Coach
University of Oklahoma

The Hon. Preston Smith
Governor (1967-1973)
State of Texas

Gerald A. Bartell
Chair
Wisconsin Foundation for the Arts

The Hon. Lionel Van Deerlin
Chairman (1976-1980)
U.S. House Communications
Subcommittee

Elie Abel
Chandler Professor of Communications
Stanford University

Dr. James A. Turman
Deputy Commissioner (1965-1970)
U.S. Department of Education

Henry Cauthen
Executive Director
S. Carolina Educational TV Network

O. Leonard Press
Executive Director
Kentucky Authority for Educational TV

Jim Bowles, Sheriff
Dallas County, Texas

November 16, 1989

Mr. Nelson L. Krueger
Director
Kansas Telecommunications Consortium
KTEC
112 West 6th St. Suite 400
Topeka, Kansas 66603

Dear Nelson:

It was good to have the opportunity to meet you last week and I can't stress enough how pleased we are that you have agreed to Chair the Kansas Chapter of Opt In America.

As I mentioned in our conversation, we are working with Governors, Mayors and citizen leaders around the country to raise the awareness of, and gain support for, this exciting new technology. It is with this support that we will turn to the United States Congress to bring this issue to the forefront of the national agenda.

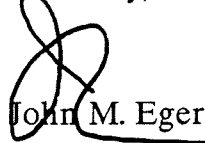
Our initial goal is to assemble a list of people from around the country who support Opt In's goal of fiber-to-the-home. We hope that each of our chapters will provide at least a dozen names for our first communication with Congress, which is slated for January 1990.

In addition, we are very excited about the fiber demonstration day on February 15th. I will call you after Thanksgiving to get your input on the role that Opt In should play at this event.

Again, welcome aboard. I look forward to talking with you after the holiday.

With kind regards and best wishes-

Sincerely,



John M. Eger

Enclosures

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KANSAS
TECHNOLOGY
ENTERPRISE
CORPORATION

MEETING NOTICE

M E M O R A N D U M

DATE: January 11, 1990

TO: Kansas Telecommunications Consortium and interested parties

FROM: Nelson L. Krueger, Director *Nelson L. Krueger*
Kansas Telecommunications Consortium

Just a note to thank you and ask for your continued cooperation with the Kansas Telecommunications Consortium. Our next meeting will be held Monday, January 22, 1990, at 8:30 a.m. at the Kansas Technology Enterprise Corporation office, located at 112 W 6th, Suite 400. The agenda is attached.

We are making progress and I look forward to an exciting meeting. We have two vendors who will share their views concerning their activities on laying fiber; we have several maps showing fiber locations; several school cluster projects are underway; our video conferencing demonstration projects have been successful; the KCC has granted special tariffs for school cluster projects; presentations have been made to the Joint Legislative Committee on Economic Development; and Fiber Optics is part of the interim report on rural development.

The Department of Education has put together a "First in the Nation" Education Technology Fair to be held in the State Capitol Building February 15, 1990.

Interactive video demonstration projects from the school clusters in southwestern and southeastern Kansas will be on display along with fifteen or more demonstrations using interactive video as a tool of instruction.

Please call (913) 296-5272 to let us know you are planning to be at the meeting on January 22 and whether you will be able to stay for an informal lunch.

I look forward to seeing you on the 22nd.

Victor Frost
University of Kansas
Telecommunications &
Information Sci.
Laboratory

Telecommunications is the next wave of growth

As an antidote to worries about the economy and U.S. industry, it's a good idea to take a look at the telecommunications industry, where technological change and market possibilities are exploding.

What is still called the phone business will almost certainly be the great growth industry of the 1990s. Already in the 1980s it provides pointers to where the world is going and an exciting illustration of how a growth industry really works.

Consider events last week in the United States and overseas:

- Pacific Telesis, the San Francisco-based Bell operating company, and a consortium of British, French and German organizations won the right Thursday to provide mobile telephone service in West Germany.

- U.S. West, the Denver Baby Bell company, announced Thursday that it was part of a six-country group that would lay fiber-optic telephone lines across the Soviet Union.

- Earlier in the week, U.S. West agreed to provide mobile phone service in Budapest, and later to all of Hungary's 10 million people.

- McCaw Cellular Communications, a smallish company based near Seattle, has agreed to pay almost \$4 billion to clinch its position as the largest U.S. provider of mobile phone services.

As is typical in growth businesses, a small ambitious company is seizing opportunity. McCaw, which has less than \$500 million in revenues, outbid BellSouth to gain control of cellular franchises in New York, Los Angeles, Houston, Dallas and Philadelphia and spread its operations nationally. That larger scope may just enable McCaw to survive what is now a \$3 billion debt burden, says Bradford Peery, a telecommunications analyst in San Francisco.

But even if McCaw fails, other buyers will jump to acquire its cellular properties, and the business will continue to grow.

In the West German transaction, Pacific Telesis stands to gain 61 million potential mobile phone customers, roughly double the number it has in California. And U.S. companies — the other six regional Bell phone companies — stand to win a lot of business because they have an edge in experience and technolo-

Outlook



By James Flanigan

gy over Western Europe's government-run phone systems.

And if Western Europe offers markets to U.S. companies, the prospects in Eastern Europe could be even more exciting. Phone systems in the East, and throughout the developing world, are dreadful. Modernizing the phones has to be a priority if those societies are to develop. But stringing wires for a traditional telephone system is costly; the short-term solution in many cases will be mobile systems, which are cheaper and faster to install.

Market possibilities in the Middle East and Africa, in Latin America, much of Asia and the Soviet Union are awesome.

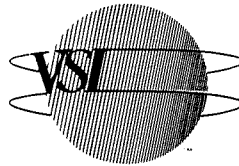
If things seem to be moving fast today, consider how rapidly the new industry of mobile communications has developed. Cellular telephones were experimental; as recently as the 1984 Los Angeles Olympics they were used only for special communications. Yet five years later the business, which is based really on people's need and desire to communicate, is growing by leaps and bounds in all parts of the United States, has been introduced in Japan and is now spreading to Europe.

Yet cellular is only a foretaste of things to come when fiber-optic cable is installed in U.S. homes.

But why won't the possibilities remain science fiction? Because of the dynamics of growth industry. Because given a chance to communicate, people will take it and create new growth industries in the process. That's why telecommunications will prosper in the 1990s and why worry is the real fiction.

Los Angeles Times Syndicate

3-16



November 9, 1989

Mr. Nelson Krueger
Director
Kansas Telecommunications Consortium
112 West 6th St., Suite 400
Topeka, Kansas 66603

Dear Mr. Krueger,

Frank Knott, Founder of Videoconferencing Systems, Inc. (VSI) with whom you have spoken recently, has provided me basic information about your organization. As VSI's Business Development Manager for the Central Region, I offer you VSI's assistance and information.

While VSI has become the leading provider of turnkey videoconferencing systems, all our systems (from single screen rollabout to executive boardroom designs) are codec, bandwidth, and carrier independent. As a result, we have the unique position of working closely with, yet maintaining objectivity toward all codec and communications vendors. Our customers often view this knowledge and impartiality as an asset from which they can benefit. We offer this same perspective to the Kansas Telecommunication Consortium.

From phoning I understand that you spend much time away from your office. I have enclosed information preliminarily that will identify typical videoconferencing applications and will allow you to view compressed video at different bandwidths. The materials are:

- * Why and when organizations use videoconferencing.
- * Typical videoconferencing applications within industries and functional departments.
- * Specific examples of how several VSI customers use their systems.
- * Effects of videoconferencing as perceived by users - survey results.
- * Compressed bandwidth demonstration tape (56kb - 1.5 mb) done by Compression Labs, Inc. (CLI). Please return this tape to me within two weeks.

I have also enclosed a VSI brochure that will provide you insight to our standardized, modular approach and to our wide range of systems.

I am anxious to hear from you Mr. Krueger to learn more about what you are attempting, whether the enclosed material is helpful to start and how we may be more helpful toward your specific objectives. Please call me at (708) 773-7304 at your earliest convenience. I look forward to talking with you.

Sincerely,



Steve Gibson
Business Development Manager - Central Region

SG:cb

Enclosure

BENEFITS OF TELECONFERENCING

Teleconferencing is often sold as a "replacement for travel". But our customers have discovered that teleconferencing does much more for a company than just saving travel dollars.

Travel time is a real waste of employee productivity. If an employee is travelling on company time, those hours are usually lost work hours. Also, persons back at the office can't reach the travelling employee, so their work can be delayed.

When persons have travelled to attend a meeting, the meeting often runs longer than normal to justify the time spent getting there. Any staff, resources, or reference materials which may suddenly be needed aren't available. Our customers tell us that teleconferenced meetings are more organized and effective.

Teleconferencing isn't a good replacement for conventions or other high-visibility travel. But employees who must travel routinely between locations for brief meetings don't usually enjoy the experience. They lose a lot of personal time, and their other duties get backlogged at work.

Travel always has some risk. In the winter, delays are common due to weather. And missed connections, poor schedules, and unexpected problems occur in any season.

Teleconferencing can help save travel dollars for your company, but it can also create new opportunities for communication. Meetings can take place which would not have been authorized if travel was required. Employees who might not be included for a travel meeting can participate in a teleconference, increasing their knowledge and allowing extra input.

Teleconferencing should be thought of as another productivity tool available to your company. *It won't solve all your problems*, but it can produce cost savings and improve productivity.

Videoconferencing codec sets market price point

DALLAS — Concept Communications, Inc. recently introduced a coder/decoder (codec) for full-motion videoconferencing that it claims is dramatically less expensive than products from other vendors.

The codec, TeleTRAVLER, operates at fractional T-1 bandwidths of 384K and 768K bit/sec and costs \$5,995. Codecs offering similar functionality to the TeleTRAVLER cost approximately \$30,000, according to Van Chandler, president of Concept Communications.

"Most American companies have converged on a price of around \$30,000 for a 56K to 384K bit/sec video codec," agreed Elliot Gold, president of TeleSpan Publishing Corp. of Altadena, Calif., which has two publications dealing with teleconferencing.

TeleTRAVLER achieves its economies of scale by using a statistical video compression algorithm that is less computationally intensive than other commonly used techniques, such as vector quantization. Reducing the amount of processing required enables the company to use fewer components, resulting in cost

savings for users.

Chandler declined to detail how the proprietary algorithm works, but he said it reduces the amount of processing required by about 100 times.

The codec has two custom chips to convert video signals to digital signals — one for compression and the other for decompression. Competing products typically compress video on components that take up three or four circuit boards, Chandler said.

TeleTRAVLER takes incoming video signals from a camera and compresses the signals down to 384K or 768K bit/sec, depending on the transmission channel to be used. At the receiving end, the signal is decompressed and the image is displayed on the user's monitor.

Two characteristics for measuring the quality of the video signal are resolution and frames per second, Chandler said.

TeleTRAVLER offers screen resolution of 256-by-200 pixels, a figure Chandler said is about 80% to 85% as good as competing products. "We decided not to display that many more pixels be-

(continued on page 36)

NETWORK WORLD • NOVEMBER 6, 1989

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...se we felt what we've achieved — a very acceptable video quality for virtually any application," Chandler said. He claims that Concept Communications' frame/sec rate of 30 is double that of competing vendors.

Although these parameters are typically used to measure a codec's video quality, it's more important for users to determine if the picture quality is acceptable, according to Gold. "I think their numbers are terrific, but the picture is in the eye of the beholder."

The codec has a toll-quality audio processor on the same circuit board as the video processors that compress 64K bit/sec pulse code modulation (PCM) voice signals down to 32K bit/sec using adaptive differential PCM.

Concept Communications will also sell full videoconferencing packages that include a JVC America, Inc. TK-885U camera, a 19-in. monitor (for which the company has not yet selected a vendor) and an NEC Corp. Voice-Phone speakerphone. The peripheral package costs \$3,500.

Chandler said the product will be targeted at users with installed private T-1 networks as well as entry-level users.

"Right now, we're dealing with this culture change of getting people used to thinking about video as a way of communicating as opposed to hopping on a plane every time they need to have a meeting," he said. "This is an extremely cost-effective way to prove video's viability within an organization."

"[Concept Communications] believes there's a market for the low end and I think that's right, but I don't believe any manufacturer will find a market at any end of the spectrum for low quality," Gold said.

Ruth Gardner, industry analyst at Dataquest, Inc., a consultancy in San Jose, Calif., echoed that sentiment. "The real issue in teleconferencing is quality," she said. "Quite frequently, you'll see that a lower price means the picture quality is lower, too."

TeleTRAVLER is available now.

Concept Communications can be reached by writing to 1950 Stemmons, Suite 4308, Dallas, Texas 75207, or by calling (214) 746-3888. □

Nelson Krueger

(KTEC)

638-0028

J. Russell Getter

214-746-3888

3-20

Funding the Future Telecommunications Infrastructure

Bailey M. Geeslin

AS TECHNOLOGY ADVANCES AND COMPUTERS and telecommunications become even more interconnected, people will reach for information as a normal part of their everyday lives—to make business decisions, treat illnesses, educate their youngsters, conduct financial transactions, seek employment opportunities, and engage in hundreds of other personal and business activities. Information, in essence, is what we as individuals and as a nation will increasingly produce, process, transmit, receive, and export.

As I will develop in this paper, the logical system for this information transport is the existing telecommunications network. A catalyst for economic development both at home and abroad, this network is to the 21st century what the interstate highway network was to the 20th century and the rail system was to the 19th century.

Information, in essence, is what we as individuals and as a nation will increasingly produce, process, transmit, receive, and export.

The capabilities of the intelligent network of the future are defined by distributed intelligence, centralized database control, increased bandwidth, high speed, large-capacity circuits, and flexible service configurability. This enhanced network provides access, transport, and intelligence. It is the highway over which a host of residential, business, scientific, educational, and public interest services could be offered, resulting not only in the promotion of commerce but also in a better way of life for all citizens. Our region and nation could enjoy a sophisticated electronic information neighborhood, one characterized by instant accessibility, convenience, and personal control.

This article is based on a talk presented at the 1988 Telecom at 150 Conference, Princeton, N.J., June 21-22. A similar version was published in the July 1989 issue of *Society Magazine*, Transactions Books, Rutgers University, New Brunswick, N.J.

Possible products and services include:

- *Educational and scientific services:* shared library databases, on-line encyclopedias, at-home education, and automatic language translation; and the ability to conduct scientific research through collaboration technology, which allows compound document transfer, simultaneous viewing and editing, computer conferencing, design review, super computer access, and remote monitoring of special laboratory facilities
- *Medical services:* home-based health care and emergency monitoring services, and on-line medical diagnostic services allowing transmittal of complex patient medical information such as cardiac images
- *Residential services:* home banking, home shopping, home security, home environmental and utility management systems, and work-at-home (telecommuting) opportunities, including text display for hearing-impaired individuals
- *Other services:* citizen access to government databases for public housing and employment information, electronic voting, motor vehicle registration, and community bulletin boards

These are but a few examples of the myriad of services that will be available to all of us through the telecommunications network of the future.

The question of central importance to the telecommunications industry, the regulators, and the nation is: will this resource be developed in a way that promotes the greatest social good or will current regulatory policy, more suited to the technological environment of the past, serve to impede the evolution of the public network and the deployment of innovative services?

Changes in Technology and the Marketplace

The forces that are driving the future intelligent network include technology, the marketplace, economics, and international competition.

Technological progress and the business market's demand for increasingly sophisticated services (high-speed data transmission, data manipulation, and other innovative information sources), integrated access, and greater control will most certainly produce improved intelligent telecommunications for this sector of the economy. However, these interests will not wait patiently for the normally slow pace of public policy change to produce such services over the public network. In-

ad, as discussed below, they will vigorously pursue other telecommunications alternatives to satisfy their demands.

Another important question for the industry, regulators, and the nation is how we will fund the future telecommunications infrastructure.

Clearly, we must develop a coherent, compatible, modern telecommunications infrastructure capable of supporting growth in the domestic economy, competing internationally, and forming the basis for an information-literate society. At the same time, we must preserve the goals of traditional regulation: quality, universal service, and economically affordable access. Most important, we must move forward aggressively to establish a new regulatory environment that will encourage investment in a modern network, promote growth in information services, support an information-rich public network, and provide a transition to a fully competitive telecommunications marketplace.

This new regulatory framework must support two goals: protection of users of essential, less competitive services; and encouragement of competitive behavior for other services. This latter goal can be accomplished through allowing rapid price changes, market-based pricing, and freedom from onerous revenue and cost accounting conventions and allocation schemes. In addition, since the cost of building such a network is high and involves a significant element of risk, the regulatory environment must permit earnings flexibility to encourage both investment in the network and the introduction of new services.

In the international arena, we have already seen Japan take a major initiative in its challenge for world leadership in the financial and information markets. The Japanese have successfully shifted telecommunications to the trade sector as an important export industry and are investing heavily in a modern, all-digital, all-fiber network of so-called "information age cities." This will result in the development of a modern telecommunications infrastructure and will allow them to compete effectively in world markets. If we are to maintain our competitive position in world markets, we must do the same...and we are already falling behind.

The Importance of the Telecommunications Infrastructure

The U.S. needs a modern advanced telecommunications infrastructure in the 1990s to deliver the promise of the information age to all members of society.

The telecommunications services industry has become a major component of a global competitive strategy.

The telecommunications services industry has become a major component of a global competitive strategy. Many competitive countries have recognized the importance of a modern telecommunications infrastructure. Besides Japan, France and Singapore have targeted telecommunications services as a primary area for investment and international market positioning. And information services are a major research and development priority for the European community as they move towards consolidated markets in 1992.

The U.S. has recognized that information-based industries are the backbone of future economic growth. 90% of the jobs created in the U.S. in the last decade were related to the cre-

ation, processing, manipulation of information. The beginning to recognize that information is the lifeblood of global competitive strategy and that telecommunications is the network that keeps it moving. However, the U.S. telecommunications infrastructure is falling behind nations such as Japan in the race for technological leadership.

Who Will Meet These Customers' Needs, and When?

If the service capabilities and benefits that are possible with new technology are to be made available to the broadest spectrum of society (rather than only to those who can afford to either build or obtain access to private networks and services), the nation's local telephone companies may represent the most viable vehicle to accomplish this goal. While there are other alternatives, addressed later in this paper, none appear to be practical.

Of concern, however, will be whether, in this new market environment, telephone companies will have the necessary incentives and legal and regulatory freedoms to fully participate in and to bring to fruition the widespread availability of information age services. The consequences of the telephone companies not responding fully to the needs of the marketplace are already apparent.

For example, large financial and high-tech firms, those typically facing significant domestic or foreign competition, have aggressively sought other sources for the new services and greater efficiencies they demand. For instance, they and other service industry related organizations such as hospitals and universities have established their own telecommunications capabilities. In other cases, competitors who are subject to less regulation were selected to perform this function. While such customer network solutions are satisfactory and effective for the large user, to the extent that economies of scale exist, it slows the development of more widely available modern communication capabilities to small users.

Also, telecommunications companies in the U.S. need major new opportunities to grow. In the past, new technology deployment by the telephone industry was triggered principally by cost savings. In a stable, monopoly environment, one dedicated primarily to the provisioning of voice-grade telephone service, new technology deployment based on cost savings worked well; indeed, the cost of basic telecommunications services has declined in real dollars for all users and this has been a major contributor to the achievement of universal service in the United States.

However, if the benefits of new technology in a rapidly changing marketplace are to be realized when they are commercially practical to provide, deployment decisions cannot continue to be based on cost savings alone. It is becoming increasingly apparent that if revenue expectations from sales of anticipated new products and services are factored into the deployment equation, new technology and its associated new services could be made available to consumers much sooner and more effectively than if costs alone are considered. In short, the investments necessary to make the telecommunications infrastructure of the 1990s a reality cannot be justified on cost savings alone.

When a new technology has the potential of producing vast social benefits, as in the case of a modern public telecommunications network, there is an even more compelling social justification for capital infusion. Although the advanced network is not fully developed, we see significant market growth on the horizon. Information services are projected to grow at a compound annual growth rate of 10% and telecommunications at 6%, as compared to 2% for the overall U.S. economy. Estimates of potential revenues from the telecommunications

place range from \$15.1 billion to \$26.5 billion by the year 2000.

The needs of this growing marketplace require a telecommunications infrastructure that is going to be expensive and complex, requiring massive investment. At NYNEX, we estimate the cost to be as high as \$30 billion over a 10- to 15-year period, assuming a modest deployment of fiber to customers' premises.

The market need is highly probable but far from guaranteed. These new market circumstances significantly increase the financial risks in the telephone industry. New technologies will have shorter lives than their predecessors and may have to be abandoned or replaced quickly to meet market needs. Some new services will be financially successful while others may break even at best. In any event, capital will have to be recovered more quickly than in the past.

In addition, a major marketing effort is required to make sure that the deployment of new technology will actually turn out to be profitable. Market circumstances will also require sufficient earnings to support faster deployment of new technology and services. Speed of deployment is dependent on revenue opportunities, financial risks, and the availability of funds.

Funding the Future Telecommunications Infrastructure

There are three basic funding alternatives: the continuation of current rate-of-return regulation, public funding, or regulatory change. Let us examine each of these in detail.

Continuation of Current Rate-of-Return Regulation

Rate of return, as practiced in today's marketplace, creates increased risk and disincentives to initiate major investment programs.

Rate-of-return regulation, as developed in the post-war era, focused on maintaining low basic service rates. In a closed (no entry) market, depreciation rates could be kept low, with costs deferred through capitalization and allocated indiscriminately among services. With *de jure* barriers now removed in many markets, and with technology and customer demand severely limiting regulators' ability to prevent entry in all markets, these practices are having unintended or counterproductive results on investment practices.

First, the body of captive customers, those with the most inelastic demand and for whom no reasonable alternatives are available, is shrinking. Pricing for an increasing number of customers must be at market, thereby eliminating the ability to extract revenues above cost to defray investments that cannot support themselves in the short run. Rate-of-return regulation does not recognize this phenomenon and continues to price above market for non-monopoly services, causing financial losses in these markets and thereby discouraging investment in network modernization for new services.

Second, regulatory review of investment decisions under traditional regulation does not accommodate the changed nature of the investment decisions facing telephone companies in today's marketplace. As a result, it creates an environment in which it is irrational to invest.

The investment model currently used (the CUCRIT, or Capital Utilization CRITeria) considers only the concrete: cost savings and revenues from identifiable services. It does not consider unidentified new services or increased usage volume from services provided by others. Nor does it recognize the "critical mass" nature of the investments of the future, which makes them larger in magnitude and, therefore, more risky than the investments of the past. Indeed, the cost savings re-

sulting from the investments needed to create the network in the future will not result in cost savings as great as in the past and cannot be used to justify investments on their own merits. Revenues need to be a decision criterion of today's investment decisions.

For example, under the traditional model, a decision to modernize a switch will be made only on the basis of cost savings and revenue increases from known new services. Neither increases in network usage resulting from services introduced by others through the network nor the value of economic development to the community in the form of jobs and taxes are considered. Yet these are a very real benefit of a modern public network infrastructure.

In addition, there is a body of regulatory thought that would not allow recovery for modernization if it either resulted in short-term overcapacity or did not directly benefit basic or dial-tone customers.

The underlying theory of the direct benefit arrangement is that "basic" customers do not "need" and therefore should not pay for "high-tech" services. This theory ignores both the integrated and incremental nature of investment in the network and the ever-evolving nature of what "basic" service is. It holds potential shareholder rewards hostage to reductions in other rates or, conversely, "punishes" the company with disallowances when markets fail to develop. And, by creating a regulatory risk of investment, it actually increases the risk of investment and results in a negative incentive to invest.

This result is exactly the opposite of what regulation should accomplish. As a society, we need to redefine basic service, not simply as plain old telephone service but as access to the many information age services that are becoming increasingly indispensable to all of us. And to support this vision, we need a modern public network infrastructure.

Public Funding

The public funding or direct government support approach relies on the principle that the social benefits to be derived from the deployment of new technology in support of the economy's infrastructure are sufficient to justify social investment. The necessary funds for modernization are made available either through pricing policies that yield high earnings for reinvestment or through general taxation.

Again, Japan is an example of a nation that is convinced that early and extensive deployment of a digitally switched and fiber-transmitted public network is necessary to the growth of the economy and the welfare of the nation. Their modernization plans provide many lessons. Japan has committed over \$120 billion over the next 10 to 15 years to modernize its information network system, and another \$150 billion through 1999 for the development of "information age cities" linked by modern telecommunications systems.

Although a workable choice in economic theory, direct government support in the U.S. is improbable and politically intolerable. If budget deficits did not kill the idea, the somewhat sincere preference for a competitive environment or the risk due to marketing uncertainty would. Public funding should be a fall-back position that could always be employed later, in less attractive markets.

Regulatory Change

Regulators, facing a market that cannot be controlled but still seeking to maintain reasonable prices to "captive" customers and encourage investment in the new technology critical to a modern public network, need to rethink the current framework of rate-of-return regulation. A regulatory reform package consisting of regulation of the price of services to the "captive" customer over time and the ability to introduce new products and services rapidly, coupled with commitments on the part of

company to invest in the telecommunications infrastructure, can solve the problems of rate-of-return regulation while continuing to regulate the company and meet the traditional goals of regulation.

Regulation of prices through a process in which the company and the regulator agree to a predetermined rate of price change would allow the company to concentrate on the deployment of new technologies to meet marketplace needs. It would force the companies to develop customer-focused strategies. And it would open the way for competition among all players.

The ability to introduce new services outside of the often contentious regulatory process (basic rate payers are protected from alleged cross-subsidies because of the predetermined formula for price changes) would speed the delivery of innovative products and services. With the basic rate payer protected through a predetermined rate of price change, the risk associated with the deployment of new technologies would be shifted to the shareholder. On the other hand, the shareholder stands to reap some of the potential rewards of the new service offerings commensurate with the risks that these new services entail. Prudent investment decisions are encouraged since the shareholder is at risk; conversely, the shareholder is encouraged to take these risks because of the potential for additional earnings.

Thus viewed, regulatory reform can be characterized as facilitating a market-based approach—a reasonable and viable alternative vis-a-vis the continuation of rate of return or public funding. It is consistent with the growing public policy for competitive markets and represents the next logical step in regulation. By concentrating on prices, this model satisfies the primary goals of regulation (quality and ubiquitous service at reasonable prices) and can bring the promise of a future telecommunications infrastructure to fruition for both the company and its customers.

Positive Steps

Positive steps have already been taken towards market-based regulatory reform. Since divestiture, state and federal alternatives to rate-of-return regulation have varied in approach from allowing telephone companies the freedom to respond quickly to market changes, to deregulating services only when competition is proven. Examples of a broad and comprehensive approach to regulatory reform are social contracts, sharing arrangements, and price caps.

These types of alternative regulation allow companies to undertake the risk of investment in modernization that cannot be justified on current cost savings because they allow the company to generate cash flows from non-basic services above the return that would be allowed under rate-of-return regulation. They also protect the monopoly consumer, again fulfilling the regulator's obligation.

Specifically within the NYNEX region, there are both enacted and pending agreements that will provide the necessary first steps to regulatory reform. An agreement between New York Telephone (NYT) and the state has been effected that commenced with a \$100 million rate reduction in 1987. The company has agreed not to file a rate case until 1990, which will substantially reduce expenses associated with the filings. NYT will share revenues over 14% return on equity 50/50 with its customers. NYT will also be allowed to accelerate the depreciation of station equipment and inside wiring. This plan is allowing NYT to give its rate payers the benefits of cost savings as well as allowing it to shift its focus to the needs of the competitive marketplace.

The Vermont Telecommunications Agreement became effective January 1989. It is a five-year agreement whereby New England Telephone will provide a three-year price moratorium

on all services, a five-year price moratorium on local exchange service, a commitment for statewide network modernization, a guarantee of universal and high-quality service, and the market-pricing of certain services up to a fixed ceiling. New services will be deregulated and, after the three-year moratorium, a few current services (including custom calling features and digital network services) will also be deregulated.

In the Federal arena, the FCC has proposed a form of price regulation, known as price caps, which will govern the way it regulates most interstate carrier services. Under the proposal, a ceiling would be imposed on interstate rates charged by AT&T and the local exchange companies. This ceiling would be adjusted annually for inflation, expected carrier productivity, and costs beyond a carrier's control (such as separations and tax changes). Carriers would have the option as to whether or not they would participate in the plan.

Conclusion

A modern telecommunications infrastructure is essential to the growth of the U.S. economy, the success of U.S. firms in global markets, and the increasingly sophisticated requirements of the final consumer.

The telephone companies are well positioned to bring the benefits and cost savings of the new technologies to the business, government, and residential markets. Serving the needs of these markets through a common infrastructure maximizes the commonality of interests of all consumers and yields enormous economies of scale and scope, to the benefit of the U.S. economy.

The cost of a modern telecommunications infrastructure will vary across regions depending largely on current states of technology, size of serving areas, and market density. We are confident that both private and social benefits will justify these expenditures. We are also confident that regulatory reform will produce the optimal deployment scenario. These changes are vital if we are to keep pace with the developments occurring outside the U.S. and to meet the needs of the 1990s customer.

We as an industry are at a critical stage of bringing the realities of the information age to society. Let us proceed boldly and vigorously.

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Biography

Bailey M. Geeslin holds an M.B.A. from Northeastern University and a B.S. degree in engineering from the U.S. Coast Guard Academy. He is Vice President of Marketing and Technology of the NYNEX Service Company, a subsidiary of New York Telephone Company and New England Telephone and Telegraph Company. His present responsibilities include product development, regulatory planning, and network implementation planning for the two telephone companies.

Previously, he was Director of Regulatory Matters at NYNEX Service Company and held several positions at New England Telephone and AT&T, beginning his telephone career in 1965.

3-24

January 5, 1990

Janet Riley
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142 Warwick Way
London SW 1V4JE
England

FAX # 01 - 630 -8831

Janet:

Thanks for being you and helping out!

Ken


.....

January 5, 1990

Mr. Nelson L. Krueger
Director, Kansas Telecommunications Consortium
% Janet Riley
London

Hi Nels!

Thought you might enjoy reading this while you fly from London to ???. I've no idea whether you regard your personal participation as appropriate, but I think it is a GREAT idea.

I intend to finish a section using my program as a model, complete with projects, budget, etc., meld it with this draft, and start the ball rolling at KTEC. I (We) will be in the que for consideration with the Jan. 15 submission group.



Ken Bishop

Working Draft

Evaluation of Network Communication Services (56 kbps to 1.544 Mbps)

Kenneth A. Bishop, Ph. D.

Summary:

This decade promises the availability of a bonanza of information services, both in the work-place and in the home. Three major elements of this bonanza, which have progressed well beyond the "futures" category include: audio-video teleconferencing, remote super-computation and high definition television. Commercial development activity in these areas is at hand. Failure to place Kansas in the vanguard of this activity will guarantee that our business outlook will continue to be mediocre and that the citizens of the state will pay billions of dollars in lost-opportunity costs. Seizure of current opportunities in communication technology can provide Kansas business' with the ability to compete successfully, both nationally and internationally, in areas where the "ante" has been prohibitive. It also can provide the information necessary for sound development of domestic communication and entertainment. Wide-area network communication services are beginning to be offered. However, unless a customer can use them effectively on a full-time basis, their cost is prohibitive.

The challenge associated with undertaking development in network communication applications involves identifying and securing an adequate "economy of scale" through appropriate integration of services. The cost/benefit ratio is too high to warrant the complete refitting of the television broadcasting-receiving infrastructure exclusively for HDTV. It has been more cost effective to do research, development and design computation in established technology centers than on arbitrarily located supercomputers via high speed data networks. Corporate America has just begun to recognize and recapture the costs of moving people vast distances for business conferences.

An example of appropriate integration of services would involve creating an environment in which a small ensemble of "high technology" organizations would share the benefits and the costs of using network communication services. Both audio-video conferencing and high resolution graphics display of remotely computed results would be provided. The physical location which houses this environment would necessarily be accessible to the public. The single most important aspect of the environment would be that its first priority is prosecution of the business of its population, not maintenance of a "theme park" atmosphere.

In order to guarantee the desired nature of the environment, seven types of participants which fall into two functional categories can be identified:

- * **Infrastructural Support Providers:**
 1. Public Institutions (leadership and financial support)
 2. Communications Services (established national network)
 3. Computation Services (commercial-technical capability)
 4. Workstation Equipment (state-of-the-art hardware)

- * **Participant Population:**
 5. University Researchers (leadership and technical support)
 6. Proprietary Organizations (significant network requirements)
 7. Private sector entrepreneurs (fiscal reality)

Candidates for participation in the activity would be selected based on the answers to the following five questions:

1. Why (candidate's perspective) does participation make sense?
2. What will the candidate gain from participation?
3. What will the environment gain from the candidate's participation?
4. What assets does the candidate bring to the environment?
5. What liabilities does the candidate bring to the environment?

Creation of the environment, its exercise for a period of two years with evaluation of its performance at frequent intervals would provide significant information on the success of the response to the challenge of effective use of network communications.

Opportunity:

An exciting opportunity for responding to the challenge exists now in Lawrence, Kansas. The Kansas Technology Enterprise Corporation (KTEC) provides leadership and nurtures business-technology partnerships through its Research Equipment Grant and Research Matching Grant programs.

Under the KTEC aegis, The University of Kansas has established a Center of Excellence in Computer-Aided Systems Engineering. In addition to providing a research management function, its faculty and staff have established a position of strength and a national reputation for the use of super-computers, located at the National Centers, in support of engineering and science via the national network.

US Sprint, a Kansas corporation, has announced network services, called "N by 56" and "Switched 56" which together offer the customer a time-shared, flexible bandwidth capability which spans the rates 56 kbits per second to 1.544 Mbits per second (T1 speed).

The Minnesota Supercomputer Center has expressed interest in offering and evaluating "switched 56" as a commercial offering.

Several hardware vendors participate with both public and private organizations in order to forecast, develop, and test workstation equipment.

At least five ongoing research programs at the University of Kansas and its Medical Center are involved in activities which utilize various combinations of network communications and super-computation.

Although several small corporations which are involved in computational and technical activities which constitute significant network requirements are located in Lawrence, four of them are located within a one-half mile radius of 15th street and Wakarusa drive.

Two of the above mentioned companies, both of which appear to be prime candidates to become participants, maintain offices in a building which is owned and operated by a local venture capital business.

Clearly, virtually all of the "players" in both categories which were identified as necessary to provide a valid test of the concept are already in position. It remains only to recognize each other and to begin the test.

Proposal:

It is specifically proposed that Professor Ken Bishop (acting in the capacity of Co-Investigator with the Center for Excellence in Computer-Aided Systems Engineering) and Mr. Nelson Krueger (Director of the Kansas Telecommunications Consortium) undertake to assemble an appropriate set of participants with which to create an environment suitable for evaluating the concept of offering "integrated network services" to an ensemble of Kansas business'.

Professor Bishop's research program in Remote Supercomputer Applications in Chemical & Petroleum Engineering will participate in the evaluation. Therefore, Professor Bishop will take on a leadership role in defining, creating, and testing the environment as well as evaluating the concept.

Congress

Budget Reconciliation Bill: Changes in the Tax Arena

On November 22, after months of intense debate, Congress passed the 1990 Budget Reconciliation Bill (H.R. 3299). Final passage of the bill, projected to produce \$14.7 billion in savings and revenues in accordance with the 1990 Gramm-Rudman deficit reduction target, had been delayed pending consideration by Congress of several important tax issues, including the capital gains tax cut, the Medicare Catastrophic Health Insurance Program, and the Comprehensive Child Care Program. The delay in passing the bill occasioned automatic across-the-board spending cuts for the federal government.

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State and Local News

The bill contains extensions and revisions of several tax provisions of significant benefit to small business, such as the Research and Experimentation (R&E) tax credit and the 25-percent deduction for health insurance expenses for the self-employed.

Research and Experimentation Tax Credit. As part of the Fiscal Year 1990 Budget Reconciliation Act, Congress has, once again, temporarily extended the R&E tax credit. The R&E tax credit, one of the most important incentives to firms that conduct the research necessary to enhance the international competitiveness of small businesses, was supposed to expire December 31, but now will be extended through September 30, 1990. The temporary extension is contrary to the Bush Administration's request for a permanent credit, but was enacted because of budget constraints.

Many significant changes to the credit were included in the legislation; several are expected to be very helpful to small research-oriented firms. First, the "existing trade or business" restriction, which made start-up firms ineligible for the credit, was removed. Now research expenditures incurred "in the active conduct of a future trade or business" are creditable. Second, H.R. 3299 eliminated the moving base, which often produced disincentives to conduct research, and replaced it with a "fixed-base percentage." A firm's fixed-base percentage is determined by calculating its ratio of R&E expenditures to gross sales for a five-year period (1984-1988). This ratio, which has a ceiling of .16, is then multiplied by the firm's average gross sales for the previous three years. The product is the firm's base. As under current law, a firm's base is subtracted from its current R&E expenditures to determine the amount upon which the 20-percent credit is applied.

The Office of Advocacy and the American Electronics Association (AEA) played a central role in developing the eligibility and phase-in rules for start-up firms. Generally, start-up firms are firms

which did not have sales or R&E expenditures for at least three years between 1984 and 1988. These firms would be assigned a fixed-base percentage of .03 for their first five taxable years. During taxable years six through ten a start-up firm would gradually be phased into its actual sales-to-R&E ratio, but would be allowed an election of those years in order to avoid possible inequities.

Other aspects of the credit include retention of the 50-percent base limitation rule, which imposes a requirement that a firm's base can never be lower than 50 percent of its current R&E expenditures. In addition, firms must deduct 100 percent of the credit they receive from their research costs under Internal Revenue Code section 174. When Congress returns in January, Advocacy, The Council on Research, Education and Technology, and the AEA will continue efforts to establish the R&E tax credit as a permanent credit.

New Life for Health Insurance Deduction. On September 13, 1989, Advocacy testified before the Senate Small Business Committee in support of extending the 25-percent deduction for health insurance premiums. The deduction was to have expired December 31, 1989, but was extended to September 30, 1990.

Civil Tax Penalties Get Civilized. The budget reconciliation bill contains long-awaited revisions to the civil tax penalty system. The Office of Advocacy testified on the need for civil tax penalty reform on several occasions before the House Oversight Subcommittee of the Ways and Means Committee and offered specific proposals for reform, particularly to the payroll tax penalty system. A study conducted for the SBA by Brown and Associates determined that 64 percent of the more than 10 million payroll-related penalties issued each year are perceived by taxpayers as being issued in error. These penalties apply at a fixed rate of 10 percent of the delinquent amount, regardless of the reason for, or length of, the delay. H.R. 3299 creates a four-tiered

penalty structure, the penalty rate escalating as the length of the delinquency increases. The minimum 2-percent penalty is imposed if the taxpayer corrects his failure to deposit the taxes within five days of the due date; a maximum penalty of 15 percent is imposed if the taxpayer fails to deposit taxes within 10 days of the date of the IRS notification of delinquency. The bill also requires the IRS to provide the name of a resolution officer who can correct errors on first contact. Similar reforms would apply to information reporting penalties and rules for magnetic media reporting. The revisions were developed by the House subcommittee, working in concert with small business and practitioner groups.

New Revenue Sources. The bill includes some \$5.6 billion in new revenues, which come from a variety of sources. Principal among these revenue raisers are: (1) a speed-up of payroll tax deposits when withheld amounts reach a threshold of \$100,000; (2) repeal of the percentage of completion-capitalized cost method of accounting; (3) imposition of excise taxes on ozone-depleting chemicals and petroleum products; (4) repeal of the partial interest exclusion of Employee Stock Ownership Plan Loans; and, (5) reduction in the amortization benefits of acquiring franchises, trademarks, and trade names, allowing amortization only over a 25-year period.

1989: The Year in Review

The first session of the 101st Congress undertook much legislation affecting small business. Some highlights include:

Section 89. Originally included in the landmark 1986 tax overhaul measure, Section 89 of the Internal Revenue Code was scheduled to go into effect January 1, 1989. Section 89 applied detailed nondiscrimination rules to employer-sponsored welfare benefit plans (plans that provide nonpension benefits such as health coverage and group-term life insurance) to ensure that the benefits were distributed fairly to both high and lower paid employees. An outcry from both small and large businesses about the complexity and costliness of the tests, and the likely stifling effect the provision would have had on expanding health care coverage to more workers, contributed to the demise of Section 89. On November 8, 1989,

President Bush signed a bill raising the debt limit which contained a single amendment—the repeal of Section 89.

Minimum Wage. On November 17, 1989, President Bush signed into law a bill raising the federal hourly minimum wage rate from \$3.35 to \$4.25. The increase would be phased in in two steps, with the full hourly rate in effect by April 1, 1991. This is the first increase in the minimum wage since 1981. The president negotiated the compromise after vetoing a larger increase earlier in 1989. The compromise bill also:

- Authorizes a subminimum training wage, which employers may pay workers age 16 to 19 for up to 90 days;
- Raises the small business exemption from \$362,000 to \$500,000 in gross sales; and
- Increases the tip credit from 40 percent to 50 percent.

Americans with Disabilities Act. In September, the Senate passed S.933 by a 76-8 vote. While supportive of the intent behind the legislation, small business groups remain concerned about the costs associated with compliance as well as the bill's unclear language. On November 14, the House Education and Labor Committee reported unanimously in favor of the House version, H.R. 2273, but the legislation must now be considered by three more House committees—Judiciary, Public Works, and Energy and Commerce. The legislation has the support of the Administration and further action is expected when Congress reconvenes in January.

Child Care. Efforts to complete action on legislation to establish a comprehensive program of federal aid for child care were not successful in 1989 but it is likely that Congress will reconsider such legislation when Congress reconvenes. There were some successes: the House and Senate both passed child care bills and the House-Senate conferees accepted the non-tax portion of the proposal. The provisions adopted include a \$1.75 billion-a-year authorization to subsidize child care for low-income families and fund state efforts to improve the quality and increase the availability of child care.

Mandated Health Care Coverage. The U.S. Bipartisan Commission on Comprehensive Health Care (the Pepper Com-

mission) created by Congress to study the problems of the U.S. health care system is scheduled to issue its report in March 1990. This report will most likely be the focus of the Congress' health care debate in the next session and for years beyond.

Defense Authorization Act. On November 29, President Bush signed the National Defense Authorization Act for Fiscal Years 1990 and 1991, which contains a number of important small business procurement provisions. The bill extends for three years the Defense Department's 5-percent minority contracting goal requirement and institutes a program to test the use of bond waivers for construction firms in the SBA's Section 8(a) program. The act also includes a program to test the use of comprehensive companywide small business subcontracting plans, and directs the Defense Department to devise a simplified method for purchasing commercial products.

Economic Outlook

Continued Growth for Women-Owned Sole Proprietorships

The number of women-owned nonfarm sole proprietorship businesses increased from 2,535,240 in 1980 to 4,462,264 in 1987, an annual increase of 10.9 percent. This represents an increase of approximately 1.9 million women business owners during this time period. The number of male-owned nonfarm sole proprietorships increased only half as fast, by 5.5 percent annually between 1980 and 1987, from 6,928,659 to 9,576,494 business owners. The higher rate of growth in the number of women-owned sole proprietorships means that the women-owned share of total nonfarm sole proprietorships increased from 26.1 percent in 1980 to 30.7 percent in 1987, with a corresponding decrease in the men's share.

By industry, the service sector posted the largest gain in women-owned nonfarm sole proprietorships—from 1,212,940 in 1980 to 2,542,337 in 1987, an annual increase of 15.7 percent. The fastest rate of increase occurred in the transportation, communications, and public utilities sec-

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Conference Participants Address Agenda for the 1990s

A small business agenda for the 1990s "should not be a passive hands-off strategy, but an active strategy based on liberation of human potential," said Mitch Daniels, president of the Hudson Institute and keynote speaker for the Office of Advocacy's 10th National Legislative Conference on Small Business Issues held in San Francisco this past December.

Daniels pointed to the "miracles" occurring in Eastern Europe and elsewhere as the "story of the age." He said that "the economic miracle led by small businesses in this country has been visible now for many years everywhere else in the world," and urged American policymakers to pay attention to the kind of leadership which has helped spawn "the movement to enterprise at its smallest, most personalized level."

More than 300 local, state, and federal policymakers, association representatives, and business owners attended the December 11-13 conference held at San Francisco's Fairmont Hotel. Acting Chief Counsel for Advocacy William Becker told state government participants that they were "key to the future of small businesses in this country . . . the front lines in your states promoting small business." Workshops and detailed information were provided on 16 topics expected to be on state small business agendas over the next decade, including access to health and child care, commercialization of small business products, the impact of recent Supreme Court decisions on setaside programs, environmental regulation, and legislation addressing problems of the disabled.

Senator Rudy Boschwitz, ranking minority member of the Senate Small Business Committee and a speaker at the conference, listed a number of legislative areas to be addressed in the next session of Congress. He said that small businesses could expect to see action on the capital gains tax, estate tax freezes under Section 2036(c) of the Internal Revenue Code, disabilities legislation, and health benefits.

A complete conference summary will be available from the Office of Advocacy early in 1990.

tors, which increased by 30.3 percent annually between 1980 and 1987; 27,696 to 86,484.

Regionally, Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) posted the largest increase in the number of women-owned nonfarm sole proprietorships: 481,945 in 1980 to 810,275 in 1987, an annual increase of 9.7 percent. Region I (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont) had the highest annual percentage increase of 16 percent: 120,273 in 1980 to 254,730 in 1987.

For more information, call the Office of Advocacy, Office of Economic Research at (202) 634-7550.

News Briefs

Small Exporters Take On The World at EXPORT EXPO 1990

Seattle, Washington will host EXPORT EXPO 1990, a four-day summit focusing on key export growth industries and featuring trade experts from across the nation and around the world. The March 27-30, 1990 event, cosponsored by the U.S. Small Business Administration and

AT&T, will be a unique opportunity for America's small exporters to meet with buyers, trade delegations, and potential business partners from Canada, Europe, Japan, South Korea, Hong Kong, Taiwan, and other Pacific Rim markets.

EXPORT EXPO 1990 offers four major attractions for small business exhibitors and participants:

- A trade fair will showcase the products and services of 350 small business exhibitors in the "Best Prospect" export industries of health care, process industries and pollution control equipment, and computers, software, and peripherals;
- A matchup program will pair foreign buyers, U.S. exporters, and export trading and management companies for face-to-face meetings;
- Workshops for the novice exporter will cover topics such as developing international marketing plans, financing exports, and protecting intellectual property rights, while country-specific sessions will help companies already exporting broaden their overseas markets;
- Policy workshops will provide participants with the opportunity to advise policymakers on small business trade issues. Final policy recommendations from the conference will be

submitted to the U.S. Congress.

For exhibitor or participant registration details, call 1-800-368-5855.

Answer Desk Calls in '89: New Record High

The Small Business Answer Desk received a record high number of calls in 1989. More than 270,000 callers contacted the Answer Desk for information on starting a small business—more than twice the number of calls received in 1988.

A computerized answering machine was installed in November 1988 to assist callers with frequently asked questions about establishing and running a small business. Callers listen to taped messages that provide information on starting and financing a small business, SCORE, SBA programs and services, available local assistance, and small business facts and data. People with specific questions can speak directly with a business counselor.

The nationwide toll-free number for the Small Business Answer Desk is 1-800-368-5855, or 653-7561 in the Washington, D.C. metropolitan area. The Answer Desk is open 24 hours a day. Counselors are available Monday through Friday, 10 a.m. to 5 p.m. EST.

State and Local News

Alabama

Alabama's Office of Minority Business Enterprise recently announced the installation of a new toll-free information hotline. Established to provide assistance to minorities, women, and veterans, the help offered includes general information on starting a business, how to prepare business plans and financial statements, licensing requirements, and more. Hotline hours are 8 a.m. to 5 p.m. weekdays. The toll-free number is 1-800-248-6889.

Colorado

The Colorado Association of Commerce and Industry (CACI) and the Colorado Chamber of Commerce Executives will present the 1990 "Business Day at the Legislature" on Thursday, January 25. The

seminar will be held in Denver at the state capitol building. During the seminar, small business owners will meet with state legislators to discuss their views on business issues. Leaders of the Colorado House and Senate who are expert on particular issues will lead panel discussions. The governor will also speak, and the event will conclude with an evening reception with state legislators. For more information, call Marta Sipeki at CACI (303) 831-7411.

Michigan

A "plastics directory" listing Michigan's plastics-related firms is now available from the Michigan Department of Commerce. Designed to help companies identify suppliers, other firms with excess capacity, and partners for venture opportunities, the 120-plus partial list of plastics-related firms is indexed by city, county, principal activity, industry served, and process. There is no charge. To request a copy, contact Sharon Tiemann, Department of Commerce, at (517) 373-3550.

Texas

The steering committee of the Texas Conference on Small Business will meet February 7 in Dallas. For more information, contact Larry Copeland of Southwestern Bell at (214) 464-4793 or SBA Regional Advocate Mary Fae Kamm at (214) 767-7635.

Wyoming

The Wyoming Business Rendezvous (WBR) is sponsoring a "Wyoming First" Trade Show Incentive Program. The program has been developed for the purpose of promoting Wyoming products and services both within and outside the state through participation in trade shows. Under the Trade Show Incentive Program, WBR will reimburse qualified applicants for one-half the expense directly attributable to the applicant's participation in an industry-specific trade show. For more information, contact Barbara Nelson, Executive Director, Wyoming Business Rendezvous at (307) 777-7286.

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Office of Advocacy
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JANUARY 1990

**News & Notes from Region VII of
Interest to Small Business**

- "P.S.," a publication by Judy Krueger, Regional Advocate, U.S. Small Business Administration, 911 Walnut - Suite 1300, Kansas City, MO 65106: (816) 426-2803.

**Recap of the First Session of 101st
Congress**

SECTION 89 REPEALED!

On November 8, 1989, President Bush signed a bill lifting the debt limit to \$3.1 trillion with one amendment which repealed Section 89 of the Tax Reform Act of 1986. That Section would have caused small and large businesses, non-profit organizations, state and local governments to undergo a time-consuming and expensive process to prove that health insurance benefits provided to employees were accepted by employees in a non-discriminatory pattern. The repeal came in time for the holidays, just before the previously scheduled December 1st effective date.

**AMERICANS WITH DISABILITIES ACT
(ADA) CAUSING CONCERN**

On September 7th, the Senate passed S933, the ADA, and on November 14th the House Education and Labor Committee reported out the House version, HR 2273. This bill, aimed at eliminating discrimination based on disabilities in employment, public services, and public accommodations, requires among its provisions that public transportation and communications services be made accessible to the disabled. There is concern among small and large employers alike that the language is unclear and that significant costs could be imposed upon them, not only for the "accommodations" but for law suits provoked by the presence of such a law and the interpretation of "undue hardship" and "discrimination." A key compromise so far includes language that accommodations for a disabled person would be "readily achievable" and not pose "undue hardship" for a business that operates out of more than one location. It also calls for consideration of "site specific" factors and the overall financial resources of a business. Businesses with fewer than 25 employees will be exempt from the employment provisions for the first two years after enactment, and businesses with under 15 employees thereafter. Retrofitting vehicles will not be required of the private transit industry, and buildings under

three stories will not require elevators. The bill still has three House committees to clear before a House vote - Energy and Commerce, Public Works and Transportation, and Judiciary.

MINIMUM WAGE

The minimum wage bill which was signed into law November 17, 1989, raises the hourly minimum wage from \$3.35 to \$3.80 on April 1, 1990, and to \$4.25 on April 1, 1991. It also authorizes a training wage for first-time workers age 16-19 for up to 90 days, and for an additional 90 days if certified by the U.S. Department of Labor. Small businesses will want to note that the exemption was raised from \$362,500 to \$500,000 annual gross sales, and the tip credit increased from 40% to 50%. The increase in the exemption level may particularly affect such items as overtime wages, which may be some relief for small businesses. A synopsis is on pages 5-6.

CHILD CARE

Agreement could not be reached by the Senate-House conferees to establish a comprehensive program of federal aid for child care. It will definitely be on the front burner when Congress reconvenes in January. Parts of S 5, "The Act for Better Child Care," and HR 3299 which were approved as part of the FY 1990 budget reconciliation bill, HR 3299, include an authorization of \$1.75 billion annually to subsidize child care for low-income families and to fund state programs to improve the quality and availability of child care.

FAMILY AND MEDICAL LEAVE

Still sitting on the back burner after its previous defeat are bills proposing that employers (of 20 or more employees) be required to provide up to 10 weeks of unpaid leave in a two-year period to care for a newborn, newly adopted, or seriously ill child, and up to 10 weeks unpaid leave to care for a seriously ill parent. Proposals also include requirements for employers to provide up to 15 weeks annually for personal medical leave. These proposals are likely to resurface early next year.

MANDATED HEALTH CARE COVERAGE

The bi-partisan Pepper Commission is scheduled to release its study of problems related to health care costs in March of 1990. Legislators have much work ahead of them working on revisions to Kennedy's mandatory health care bill. The furor caused by Section 89 and its subsequent repeal dealt a blow to such efforts to require employers to provide health care coverage. Studies have revealed that

46% of employers with fewer than 10 employees do provide health care coverage. Those who do not provide coverage report that health care coverage for them is not affordable, and/or their employees are covered elsewhere. Of firms with 10-24 employees, 78% provide coverage, and of firms with 25-99 employees, 92% do. Of firms with 100 or more employees, 98%-100% provide health care coverage. (ICF, Inc., 1986.) The fixed costs of selecting and administering health plans for small firms are proportionately higher for small firms than large firms. Small firms realize only \$75 in benefits per \$100 in premium, while large firms realize \$95 in benefits - 25% overhead vs. 5% overhead. With health care costs continuing to rise, and the climate created by Section 89, the problem of health care coverage and ensuing debates over remedies are likely to intensify.

RURAL DEVELOPMENT

The plow bogged down as rural development initiatives encountered tough turf battles. Progress may have to wait on a spring thaw as various parties from the Farm Credit System to the banking industry sort out their differences. There are concerns that some of the cost estimates (for, i.e., the Rural Telephone Bank loan program) are understated. There is opposition to new federal bureaucracy; and feelings that more authority should be given to the states in matters of rural development. The spirit of a hay rack ride is over for rural development proposals: it will be a tough row to hoe in 1990.

BUDGET RECONCILIATION

On November 22, barely in time for Turkey Day, Congress passed the \$14.7 billion budget reconciliation bill. The budget-holding provisions of the Gramm-Rudman-Hollings Act will hold until after the first week of February.

TORT COSTS IN THE U.S.

According to Tillinghast, a Towers Perrin company, costs incurred through the U.S. tort system far exceed those of comparable foreign legal systems. U.S. tort costs run 2.5% of GNP, at least three to eight times relative costs in Europe, Japan, and Australia, and costs for verdicts and settlements in personal injury and death cases continue to escalate at increasing rates. It will take the unselfish committed efforts of all parties involved - insurance companies, attorneys, legislators, regulators, consumer groups, professional groups, and manufacturers - to arrive at a stable, accessible, and affordable insurance environment for consumers.

Some academics are now recommending that the insurance industry itself should support a repeal of the McCarran-Ferguson anti-trust exemption. However, the recommendation continues that repeal should be coupled with an exemption for those activities that actually enhance competition. This, say the academics, would be one step toward alleviating the hostility against the insurance industry

that might lead to more productive negotiations toward solving the liability and health insurance problems of accessibility and affordability. Others might then be willing to consider the duress insurance companies are under to provide more service with expanded, even undefined, liabilities.

SBA, STAND UP AND BOW

In a report released in October 1989, by Allan S. Mandel, Assistant Associate Administrator for Financial Assistance, SBA, the General Accounting Office estimated that 30 to 40% of banks' long-term lending to small businesses carry an SBA guarantee. In FY 1988, the SBA net loss rate on 7(a) guaranteed business loans was 3.7%. Latest figures show the 1987 net loss rate on all commercial and industrial loans by banks was 1.2%. Since SBA's mission is to fill a gap for long-term financial assistance for businesses without history or without the normally required amount of collateral or equity, that loss rate seems "about where it should be."

It would be well to consider the indirect positive impact of SBA and its loan and other programs. SBA has succeeded in bringing to light the import of small business in the economy in terms of job creation, innovation, productivity, and employment. It continually reminds lawmakers and regulators that what impacts small businesses will impact the economy as a whole. By filling the financing gaps identified in the early '50s, SBA has contributed to the birth and survival of many businesses now household words, i.e., NIKE, Apple, and Winnebago. By focusing on small business needs, SBA has served to draw attention to ways states could participate in encouraging small business growth with innovative financing programs, incentives, and by providing avenues for regulatory relief. The leadership role that SBA plays may indeed be even more important than the quantifiable impact it has had through its own programs, which are in themselves significant.

IOWA

As a result of the Public Input Meetings around the State during October and November, the Iowa Small Business Advisory Council submitted an agenda of issues for consideration and adoption by the Governor as topics to be addressed by the Iowa Assembly and Iowa Congressional delegation. The priority issues are: Mandated Employee Benefits; Fair Competition; Financial Assistance Programs; and Environmental Regulations.

The Council recommended that no level of government should mandate benefits - that employers should be allowed to determine benefit packages with employees; and that no mandated benefits would be enacted without a small business economic impact study to ensure that small businesses would not be faced with undue hardships in compliance.

The issue of unfair competition from nonprofit and governmental entities was equally evident from the public

sessions. Complaints were registered about the Regents institutions expanding into commercial activities which were not clearly related to the mission of education. The expansion of the Iowa Prison Industries' activities was also questioned. Recommendations included: 1) Disallowing nonprofit organizations from using their tax-exempt status advantages in selling products and services; prohibiting direct government-created competition with the private sector; requiring the Board of Regents to comply with the same standards as other governmental entities; encouraging purchasing by governmental entities from the private sector by requiring government entities to consider all costs (direct and indirect) in their bids for contract; and the establishment of a Private Enterprise Review Commission to review activities of governmental agencies for aspects of unfair competition or unfair trading practices.

To fill a void felt by the small business community in the availability of state assistance for retail and service industries, the council recommended expansion of current programs and more effective marketing. Current programs are viewed as too time consuming and unresponsive to existing needs. The Council recommended establishment of a Microenterprise Development Fund to offer technical and financial assistance to small businesses that are not big job creators.

As for environmental concerns, the council recommended that economic impact studies be done prior to enacting new environmental laws so that undue hardships are not placed on small business.

The Iowa Association of Business and Industry adopted a legislative agenda which includes the same or similar issues, and extends into favoring interstate banking; exploration of alternative sources of energy; supporting cost-based utility rates with no cross-class subsidization; retention of the right-to-work law; individual responsibility for health insurance with a safety net for those unable to obtain insurance supported by all of society - not just employers; amending the State's minimum wage law to conform with Federal standards; and tort reform including modifications to comparative fault and joint and several liability, the collateral source rule, state-of-the-art defense, and the application of interest on judgments.

KANSAS

Steps to Success: A Guide to Starting a Business in Kansas, a product of joint effort by the Division of Existing Industry of the Kansas Department of Commerce and Southwestern Bell Telephone Company was recently released. This expanded guide covers business organization questions, registration requirements, sources for business assistance and financing, telecommunications data, and state and local taxes. It also contains a business plan format which may be used for planning purposes, and a listing of other agencies and entities as possible resources for particular business categories. Steps to Success, compiled by

Deana Beardmore, is available for \$2.50 from the First Stop Clearinghouse, Kansas Department of Commerce, 400 S.W. 8th - 5th Floor, Topeka, KS 66603-3957.

EDUCATION, TRAINING, AND RETRAINING

A study on Kansas Business Training recently completed by the Institute for Public Policy and Business Research was presented to the Joint Committee on Economic Development. Surveys were completed with 618 businesses. A primary objective of the study was to assess the strengths and weaknesses of the technical training system of the state in order to identify policy options to ensure that the training and retraining needs of business will be met in the next decade. It was expected that certain technical skills might be found wanting by employers. What was revealed by the report was that employers found basic skills in need of improvement among their employees. Those skill areas in need of improvement identified were: writing, listening and oral communication, problem solving, interpersonal relations, teamwork, goal-setting and personal motivation, organizational and leadership skills, adaptability, proper work attitudes, and microcomputer skills. There were questions concerning to which level of education to attribute these deficiencies, and what could be done about the situation. Most employers rely on consultants, vendors, commercial trainers, and in-house training to convey specific technical skills to their employees as such training could be most relevant to the firms' needs both in terms of skills and equipment and in terms of time.

CONGRATULATIONS to Wenger Manufacturing, named "Exporter of the Year" by Governor Hayden of Kansas. Wenger, located in Sabetha, employs 150 people in the manufacture of extruding equipment used in the processing of breakfast cereals and snack foods. The firm was cited for increasing exports 38% in 1986, 107% in 1987, and 176% in 1988. Wenger president, LaVon Wenger, was presented the award at a luncheon in Topeka, and all employees of the company also received "Exporter of the Year" pins. Hayden said, "The reason Kansas companies succeed is because of their products, they emphasize research and development, and their employees exemplify the tremendous work ethic in Kansas. This is why our companies' exports have placed Kansas 12th among U.S. states in export sales per capita.

Clayton Yeutter, Secretary, U.S. Department of Agriculture, was the keynote speaker at the banquet opening the 119th Annual Meeting of the Kansas State Board of Agriculture, January 9-11, 1990, which drew over 700 participants. Other key speakers during the conference included Senator Bob Dole, Congressmen Pat Roberts and Dan Glickman, Martin Andreas (Senior Vice President of Archer Daniels Midland), Dr. Will Carpenter (Monsanto Agriculture Company), and James Mosely of EPA. Priorities for the 1990 Farm Bill, crop insurance, disaster programs, the essence of rural development, food safety, and environmental concerns were among the issues discussed.

MISSOURI

This year's session will see the reappearance of several issues, perhaps from slightly different approaches: Sales taxes and use taxes, health care coverage, employment security practices, drug testing, employer accommodations for jury duty, waste disposal, workers' compensation, salary repositioning for the department of economic development, a strategic plan for economic development, financial assistance for businesses, improved roads and bridges, improved job training programs, establishment of a department of commerce, and changes in the MO-Bucks program, TIF, and EZ.

NEBRASKA

The Unicameral began the second session of its 91st Legislature on January 3, 1990. Since then approximately 200 new bills have been added to the carry-over of 344 bills from last session. The application of sales tax, regulation of telecommunication companies, employment security rates, minimum wage, waste disposal authority, family and medical leave, definition of "business inventories," property tax provisions, modification of the definition of "petroleum tanks," defining "employee leasing company and client," establishment of a health care cost data center, enactment of an Employee Right-To-Know Act, limits to credits for capital gains, and modifications to workers' compensation are among the issues to be debated. This year's 60-day session will adjourn April 9th.

HELP FOR SMALL BUSINESSES

State Agencies

IOWA

Call-One at 1-800-532-1216 or contact
Julie Blum, New Business Development Manager, IDDED
200 East Grand Avenue, Des Moines IA 50309 (515)
281-8310

KANSAS

Jack Montgomery, Director, Existing Industry Development, KDOC
400 SW 8th, 5th Floor, Topeka, KS 66603-3957 (913)
296-5298
or The Rural Assistance Center at 1-800-KAN-DIAL

MISSOURI

First-Stop-Shop at 1-800-523-1434 or contact
Mike Heimericks, Manager, Small Business Division,
MDED
P.O. Box 118, Jefferson City, MO 65102 (314) 751-4982

NEBRASKA

One-Stop Business Assistance Center 1-800-426-6505
or contact
Gary Targoff, Director, Division of Small Business,
NDED
P.O. Box 94666, Lincoln, NE 68509-4666 (402) 471-4167

SBA District and Branch Offices

- Cedar Rapids, IA - (319) 399-2571
-
- Des Moines, IA - (515) 284-4026
-
- Wichita, KS - (316) 269-6273
-
- Kansas City, KS & MO
- - (816) 374-6762

- St. Louis, MO - (314) 539-6600
-
- Springfield, MO - (417) 864-7670
-
- Omaha, NE - (402) 221-3604
-

SBA SMALL BUSINESS ANSWER DESK

1-800-368-5855

EPA SMALL BUSINESS HOTLINE

1-800-368-5888

FAIR LABOR STANDARDS AMENDMENTS OF 1989 - MINIMUM WAGE

- Summary from the Division of Employment Standards, DOL
- Effective April 1, 1990

Minimum Wage Hourly Requirements

- Present to 3/31/90 - \$3.35
- 4/1/90 to 3/31/91 - \$3.80
- 4/1/91 & after - \$4.25

Enterprise Coverage

The dollar volume test for enterprise coverage will be raised (4/1/90) from \$250,000 (\$362,500 for retail firms) to \$500,000. (Employees of firms that have an annual volume of business of less than \$500,000 are covered by the FLSA in any workweek in which they are individually engaged in commerce, the production of goods for commerce, or in a closely related activity.)

Construction and laundry/dry cleaning enterprises, which previously were subject to enterprise coverage irrespective of their annual dollar volume of business, become subject to the \$500,000 test. (Hospitals, schools, and public agencies continue to be subject to enterprise coverage without regard to their volume of business.)

Grandfather Clause

Any enterprise that ceases to be covered by virtue of the increase in the enterprise coverage dollar volume test must continue to pay its employees not less than \$3.35 per hour, and continues to be subject to the overtime pay and child labor provisions of the FLSA.

Retail Exemption

The minimum wage and overtime pay exemptions for small retail establishments, Secs. 13(a)(2) & 13(a)(4), are repealed. Thus, employees of such establishments become subject to these provisions insofar as they are individually engaged in commerce or the production of goods for commerce in a workweek.

Training Wage

Under certain conditions, employers can pay employees, under the age of 20, an hourly wage of at least 85% of the minimum (but not less than \$3.35) for up to 90 days.

An employee who has been paid at the subminimum wage for 90 days can be employed for 90 additional days by a different employer, if that employer provides on-the-job training in accordance with rules to be issued by the Department of Labor.

Employers are prohibited from displacing regular employees in order to hire employees eligible for the subminimum wage.

A maximum of 25% of the total of all the establishment's employees' monthly hours can be paid at the subminimum rate.

The training wage provision expires 3/31/93.

Tip Credit

Employers can take a tip credit of up to 40% of the minimum wage for certain tipped employees. This increases to 45% on 4/1/90 and to 50% on 4/1/91.

Remedial Education

Employers may employ employees who lack a high school diploma, or who have not attained the educational level of the 8th grade, for up to 10 hours over 40 in a workweek without paying overtime if the employees are provided with remedial reading or other basic skills during such hours. The training must not be job specific.

Puerto Rico

The mainland increases in the minimum wage will be phased in, industry by industry, for workers in Puerto Rico. All industries must reach the mainland minimum wage levels by 4/1/96.

Civil Money Penalties

Employers who willfully or repeatedly violate the minimum wage or overtime pay requirements become subject to civil money penalties of up to \$1,000 per violation. (The civil money penalty provisions for child labor violations were not affected by the Amendments.)

Congressional Employees

Employees of the U.S. House of Representatives and the Architect of the Capitol become subject to the FLSA.

Administration and Enforcement

The Wage-Hour Division of the Employment Standards Administration of the U.S. Department of Labor will draw upon the experience of other DOL agencies that administer programs regulating employment and training. Their objective will be to provide protection to the trainees while placing minimum paperwork and reporting burdens on employers. Also, Wage-Hour will, as required by the Amendments, receive input and assistance from the Department of Health and Human Services and the House Education and Labor Committee and the Senate Labor and Human Resources Committee.

Discrimination

Wage-Hour has established procedures for conducting investigations under Section 15(a)(3) that it believes will enable the Division to administer the relevant provisions of the new law.

- **Thank you to Everett Jennings, Regional Administrator, ES-DOL, Region VII, for sharing this information. For more information, call the Regional Wage-Hour Division at (816) 426-5386, or the Office of Wage Determinations at (816) 426-5387.**