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The Changing Telecommunications Industry

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THE CHANGING TELECOMMUNICATIONS INDUSTRY

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This project is dedicated to the memory of my father who valued education and worked hard to achieve his goals.

Angelo J. Graceffa

1913-1988

To my husband, ***Daniel****, whose support helped make this dream possible*

and,

To ***Southwestern Bell*** *for their financial assistance.*

ABSTRACT

Telecommunications in today's global society has undergone a dramatic transformation since the invention of the telephone. In the early years of telephony, a host of dedicated men and women endured tremendous hardships to pioneer the telephone. Bell, his wife Mabel, his two benefactors along with Thomas Watson and Theodore Vail fought to gain recognition of the instrument and establish its usefulness to society. Many great inventions came from by the Bell Laboratories, which forever sought a better way, encouraging the progress of civilization. Despite major setbacks caused by the government and regulation, the Bell system evolved into a very capable and customer-oriented entity. Even divestiture and the break up of the "natural monopoly" has served to open the doors of opportunity. New markets and services were created in an effort to meet the challenge of regulation and competition. The scope of possibilities afforded by the "Information Age" transcends the imagination. Today, data, voice and video transmissions

coupled with increasingly popular computer networks, are eliminating cultural differences in a world of rapid change.

Technological advancements occur continually, making the future of telephony and telecommunications difficult to project.

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THE CHANGING TELECOMMUNICATIONS INDUSTRY

Chapter I: INTRODUCTION

In 1588, French essayist Michel de Montaigne remarked, "There is no pleasure to me without communication, there is not so much as a sprightly thought comes into my mind that it does not grieve me to have produced alone, and that I have no one to tell it to" (Andrews).

In the beginning, communication spread by word of mouth, drums or pictures. When roads were built, people traveled to other towns, wrote letters, scrolls and books. With the advent of newer methods of transportation, horses and boats, communication spread faster.

Until the invention of the telephone in the twentieth century, communication was never seriously recognized as an important human need. This one instrument greatly enhanced the status of communication.

Since that time, traditional telephone companies have undergone extensive change, especially in recent decades, due

to the involvement of government legislation and increased regulation as well as technology. Most everyone in the United States with a desire to own a telephone is able to acquire basic telephone service. Growth within the telecommunications industry must occur in the form of new services such as video, data, wireless and cable, forcing companies to evolve into full-service telecommunications providers.

To that end, the telephone has been singularly responsible for the most significant strides in communication. From that one instrument, along with the research and development conducted by the telephone company laboratories, major advancements in media have progressed.

Today's workplace, as well as the telecommunications industry, is rampant with change and adaptation is essential. Organizations must learn to adapt quickly to ever-changing variables such as political and consumer pressures, new product development, global and local competition, mergers, acquisitions and restructurings.

Living in a global economy, business rules and markets change extremely rapidly. The organizational turmoils caused by this circumstance require massive transformations in policies and procedures. Business as usual or success through adaptation are slogans of the past.

Attempts at successfully shaping the future can be fraught with external as well as internal limitations. The rising level of competition created by the loosening of government regulation, the quality of competitors' goods and increased services contributes to an increasingly tough environment. A highly fickle stock market that places far too much emphasis on short-term results necessitates flexibility on the part of the organization.

Ever-changing technologies and human needs require organizations to make quantum leaps in order to utilize those technologies and meet those needs. Life in the future will be unpredictable making adaptation difficult.

Isaac Asimov, the Russian-born U. S. author, once said of change:

> It is change, continuing change, inevitable change, that is the dominant factor in society today. No sensible decision can be made any longer without taking into account not only the world as it is, but the world as it will be.... This, in turn, means that our statesmen, our businessmen, our everyman must take on a science fictional way of thinking. (Andrews)

Telecommunication companies of the future must have not only a sense of vision but also leaders with a sense of management.

Timothy Nolan says in his chapter on Strategic and Tactical Decisions that the real challenge in the planning process lies in changing managers into leaders, changing their thinking from terms of the *how* to the *what*. This is particularly challenging when the *whats* are new or currently unknown (25).

1996 has been dubbed "The Year of the Telephone" as the historic signing of the Telecommunications Act changed the face of the telecommunications industry forever. This document touches on such controversial topics as

Interconnection, Bell Operating Companies in Long Distance, Universal Service, and Access Fees.

This paper focuses primarily on the evolution of the telecommunications industry, its past, present and future potential. A thorough examination of the creators of the industry, The Bell System, and its significance in today's competitive and regulatory atmosphere is necessary as a prelude to determining the future state of telecommunications. It addresses the special issues impacting telecommunications, the information age, which today encompasses all forms of electronic communication. How will the telephone companies fare in this new marketplace, and who will succeed in the global environment?

Looking Back

In establishing the history of telecommunications, it is imperative to understand the relationship of the entities involved from its earliest beginnings through the current point in time. This specifically includes the Bell Telephone System, Western Electric and American Telephone and Telegraph (AT&T).

Alexander Graham Bell (known as Graham), creator and founder of the telecommunications industry, came from humble origins. He was the grandson of a Scottish actor, the first Alexander Bell, who became a teacher of elocution, initiating a family tradition. He moved to London, where he opened and directed a successful elocution school, helping people overcome stammering and lisping problems, as well as teaching "cockney girls" proper English speech.

Alexander's son Melville delved further into the field, writing textbooks on correct speech. He even invented a code

of symbols he termed "Visual Speech," which depicted exact positions and actions of the throat, tongue and lips during speech. These very symbols became the guide for training deaf people to speak intelligibly. As Melville's wife lost her hearing when Alexander Graham Bell (Graham) was 12 years old, Visible Speech became an important function in their home.

Born in Edinburgh, Scotland, in 1847, Alexander Graham Bell was a talented musician who, at the age of 15, aided his brothers and father in public demonstrations of Visible Speech. He and his two brothers developed a model human skull, filled it with a good reproduction of the human vocal apparatus and worked it with a bellows enabling it to say, "Ma-ma."

Graham began his student teaching career at a boys' school, in the fields of music and elocution. He went on to the University of Edinburgh and the University of London where he taught deaf children Visible Speech. Not only was he a very caring individual who was concerned for his students but he thoroughly enjoyed his profession (Todd 7).

Graham continued his research and conducted studies on "changing resonancies within the human vocal cavities as the tongue moves in producing vowel sounds." A learned German scientist, friend and colleague in the field, Hermann von Helmholz, read the report for Melville. In his book entitled Sensations of Tone, Helmholz discusses speech theory and his experiments with electrically-driven tuning forks as well as mechanically produced vowel sounds. Graham's inadequate knowledge of German led him to the misinterpretation that these mechanical vowel sounds were telegraphed over a wire. Even after he discovered his error, Bell could not get the idea out of his mind and an intense interest in electricity developed as he continued his experimentation.

When Bell's brothers became ill with tuberculosis and died, Graham also became ill. Upon the advice of doctors, Melville moved his family to Ontario in 1871, where Graham recuperated. The Bell reputation and theory of Visible Speech preceded them, and at the request of the owner of a deaf school in Boston, Melville sent his son Graham to work with

the teachers there. Society at this time felt the deaf were impossible to teach and should be shut away with other deaf people. Graham disagreed, proved them wrong, and revolutionized the teaching of the deaf, with his Visible Speech. He was a great success at Sarah Fuller's School as well as the Clarke School for the Deaf and the American Asylum.

Gardiner Green Hubbard, a Boston attorney, was a major supporter of Bell's theory of Visible Speech and later became instrumental in the development of the telephone. His daughter, Mabel Hubbard, had been deaf since suffering a scarlet fever attack at the age of four. She became one of Bell's students and later his wife.

Bell opened his own school in Boston to train teachers in "Vocal Physiology and the Mechanics of Speech" but continued to train deaf children. A year later, he was appointed Professor of Vocal Physiology at Boston University, continuing his efforts to assimilate deaf children into society. His networking afforded him the opportunity to acquaint

himself with another of his future benefactors, Thomas Sanders, whose five-year old son was also a student of his.

As Bell's interest in electricity continued to grow, he established a small laboratory where he worked at night in his quest to find a way to send multiple messages simultaneously across a single telegraph wire.

Fig. 1 "Thomas Watson" (Todd 9).

In 1875, during an attempt to perfect a method for carrying more than two messages simultaneously across a single telegraph line, he heard the sound of a plucked spring along sixty feet of wire. Thomas Watson, who plucked the spring in the attic electrical workshop, was trying to reactivate a harmonic telegraph transmitter. On this transmitter, whose reeds or springs were tuned to different signal frequencies, a contact screw had been screwed down too far, leaving a circuit unbroken. Recognizing the significance of this sound, Bell pursued this discovery, filing a patent on February 14, 1876.

During the course of another experiment on March 10, 1876, the 29 year old inventor, dropped a liquid transmitter, spilling acid on his trousers. His pleas for help to his assistant, Thomas Watson, echoed across the globe. "...come here. I want you," transmitted the first complete sentence by voice over wire and revolutionized communication.

Kenneth Todd describes Bell as a humanist:

> ...a man dedicated to helping disadvantaged and often discarded deaf children lead normal lives, had produced an invention which would, when applied to human society, produce enormous changes and improvements in the lifestyle of the world's peoples...His dreams and his personality do not pass entirely out of this history, however, but continue to color the corporation that his interest in hearing and speech had started. (Todd 9)

In October of the same year, Gardiner Hubbard borrowed a telegraph line between Boston and the Cambridge Observatory, attached a telephone at each end and conducted a three-hour conversation with Thomas Watson, the first sustained use of the telephone.

A verbal offer of partnership by Thomas Sanders was soon followed by a similar one from Gardiner Hubbard. The first telephone corporation was born of these three men, the Bell Patent Association. Two further patents were issued based on improvements in telegraphy, setting the technological foundation of the Bell System. Publicity was needed to demonstrate the new invention, and Mabel Hubbard was instrumental in getting Bell to the Philadelphia Centennial Exposition, where he set up a scientific exhibit. When a group of uninterested judges passed by his exhibit, the Emperor of Brazil who had met Bell in Boston, stopped the party to observe the experiment. The judges were amazed as Bell recited Hamlet's soliloquy. A surge of interest in the telephone followed, rekindling enthusiasm in Bell and his supporters.

On August 4, 1877, the three members of the patent agreement met to form the Bell Telephone Company. The only full time employee, Thomas Watson, was given a one-tenth interest in all patents the company owned, forming the first research and development division of the Bell System. Bell

toured Europe, demonstrating his new instrument to Queen Victoria. While the Queen was impressed, Bell returned to America depressed that he would spend the rest of his life frugally managing his meager teaching salary.

While Bell was in Europe, Hubbard became so discouraged, he gave away several telephone exchanges and even tried to sell the patents to Western Union for $100,000. Anson Stager, then Western Union Vice President, turned him down but later became a silent partner with some inventors established as Electrical Appliance Manufacturers. Stager worked out a merger with Western Union, organizing the Western Electric Manufacturing Company. When Thomas Edison developed a telephone transmitter far better than Bell's and sold it to Western Union's American Speaking Telephone company, they were in a far better financial position than Bell with their wire network and better equipment. Western Union even went so far as to purchase controlling interests in several Bell exchanges.

Gardiner Hubbard felt the struggling Bell organization needed a progressive leader and he knew just the man.

Theodore Newton Vail, who was a young railroad mail superintendent in Washington, D. C. accepted the post, becoming general manager, organizer and promoter. Vail was willing to fight hard for what he believed; he was a man of good business sense and uncommon foresight. Ready for battle, Vail responded to Western Union's claims to have invented the telephone, by first sending a copy of Bell's patents to every Bell agent in the country, instructing them not to succumb to the opposition. When the Bell Telephone Company reached an all time low several months later, two inventors offered a transmitter to the Bell company, equal to or better than the one Edison had sold to Western Union. This contraption sported a separate transmitter and receiver, placing the Bell enterprise back in the competition. Western Union retaliated by setting up business in Bell's stronghold of Massachusetts, forcing Vail to file suit against them for infringement of patents. However, before a court decision could be reached, Western Union agreed to sell all its telephones and systems (about 56,000 telephones in 55 cities)

and drop out of the telephone business from then on (Todd 21).

Vail further manipulated them into relinquishing all patents developed and owned dealing with the telephone, agreeing to pay 20 percent of all costs of new telephone patents. Additionally, Western Union would receive 20 percent of all rentals or royalties of the Bell company, in return, and Bell would stay out of the telegraph business.

Early telephony was fraught with difficulties, as many people of influence felt competition in the industry was good, keeping prices down. However, price wars raged until one company would end in bankruptcy, forcing the survivor to jack up rates to recoup its losses.

The telephone was a success by 1881 as only nine cities with over 10,000 inhabitants and one with over 15,000 were without a telephone exchange. American Bell acquired a controlling interest in the Western Electric Manufacturing Company and shortened its name to Western Electric.

Bell companies alone boasted 855,900 telephones in service by 1900, up from 240,000 eight years before.

But, along with success came greater expenses. Unfortunately, more lines were required than economically or physically possible to interconnect, since it took one line to interconnect two phones, three lines for three phones, six for four phones, ten for five phones, 15 for six phones, etc. This necessitated the development of a switching system and the "central office" where all locally installed telephones were terminated on a switch. At first the switch was very simple, but as more and more telephones were connected the switch became increasingly complex. The large switch then became a switchboard (Todd 17).

Fig. 2 "Emma M. Nutt...the First Female Operator" (Todd 15).

Employees hired to operate the switchboards were called "operators". At first only young men were employed, but on September 1, 1878, the first female operator, Miss Emma M. Nutt, was hired. Customers liked her professionalism and the female operator stayed.

Vail knew the future importance of a nationwide telephone network even before the first successful "long line" was constructed and opened for public use on September 4, 1884. These long distance lines crossed territories of other licensed telephone companies and used their poles. To save costs and bookkeeping confusion, a subsidiary was formed and the American Telephone and Telegraph Company was incorporated in 1885. This corporation's sole purpose was to construct, buy, own, lease or otherwise obtain lines "of electric telegraph within and partly beyond the limits of the state" (Todd 30).

Corporate laws in Massachusetts forced the transfer of all Bell Company assets to the American Telephone and Telegraph Company, who became the parent in 1899. AT&T was now a holding company for stocks of associated operating and manufacturing companies as well as owning and operating long distance lines, lines that connect the system of associated companies together.

In 1907 a consolidation of Western Electric's Engineering Division with AT&T's engineering staff produced the Bell Laboratories, pronouncing itself a technologically based industry.

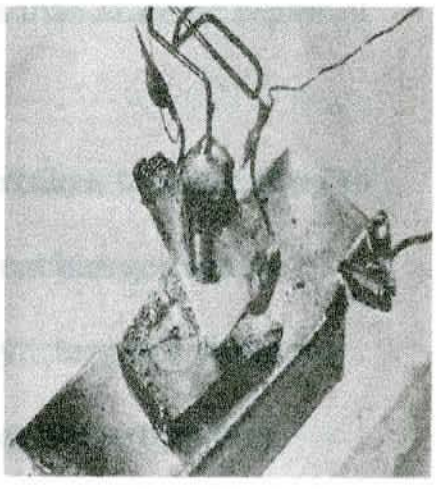

Fig. 3 "The First Transistor" (Todd 57).

Kenneth Todd views the corporate philosophy uniquely:

> The Bell System has, by its very nature, always operated on the theory that a better way is possible through research and development and that from this approach will come better communications.

Bell worked on his invention to this end, and the Bell Telephone Laboratories work toward this end today. (26) From these laboratories have come such inventions as color television, wireless telegraphy, talking films, the transistor, etc.

After spending nine years building the business, Vail left the company only to return twenty years later and in 1911 consolidated Bell Associated Companies into state or regional organizations. He is quoted as saying:

> ...A telephone system which undertakes to meet the full requirements must cover with its exchanges and connecting lines the whole country. Any development which is comprehensive must cover some territory which is not, and may never become, profitable in itself but must be carried at the expense of the whole... It is contended that if there is to be no competition, there should be public control. (qtd. in Todd 38)

In 1918, shortly before the end of World War I, the U. S. Post Office took control of the Bell System. Government takeover, an extreme form of regulation, had been tried and

failed. At the end of the war and following litigation, the company was returned to private hands.

Telephony grew rapidly. In 1909, after American Telephone and Telegraph acquired Pioneer Telephone and Telegraph, the company was restructured into the "three column type" (Traffic, Plant and Commercial Departments). David Park quotes Mima Blanchard, an Oklahoma City operator's 1907 memoirs:

> We are now growing too fast for our equipment... We get service complaints, out-of-order complaints, in fact every kind of complaint known in the telephone business... We have no book of instructions and everyone has a different idea as to what should be done. We are bewildered... (29)

In some cities well into the 1920's, a situation had developed where more than one local telephone company existed in a less than harmonic state. Park gives a specific example of one such situation which was of major inconvenience to the customer:

> If Mrs. Jones wanted to talk to Mrs. Smith down the street and Mrs. Smith had "the other company's phone," Mrs. Jones would just have to walk to Mrs. Smith's house. Or, if Mrs. Smith's neighbor had the same telephony service, "Mrs. Jones could call Mrs. Smith's neighbor and ask her to summon Mrs. Smith to the phone. (21)

Other telephone people realized success depended upon cooperation to hold down rates and bring in new customers. Improvements in service developed from sharing operating techniques. Such an atmosphere was mutually beneficial to the customer and business enterprise, creating more jobs for employees and higher profits for owners (Park 24).

Long distance calls during the twenties were complicated, and for many years local service could not be connected to long distance. When customers in St. Louis, for example, wanted to call out of town, they would contact the operator and say *long distance*. The local operator would connect the call to a *recording* long distance operator who

would get the information from the customer and pass it on to a girl in roller skates. This girl would deliver the ticket to a long distance *line operator* at another local switchboard who would ring the distant city, say Memphis. The Memphis operator who handled incoming long distance calls would contact a *B* operator at the Memphis central office and instruct that operator to ring the desired number. The St. Louis *line operator* would wait for the Memphis customer to answer and plug into a St. Louis incoming toll trunk, reaching a *local trunk operator.* The *originating line operator* would say to the *local trunk operator*, for example, *1-2-3-4 without*, meaning to plug into the corresponding jack without testing for a *busy.* Since the customer was waiting patiently for his call to go through, the line would probably be busy or the customer might have hung up (Park 67).

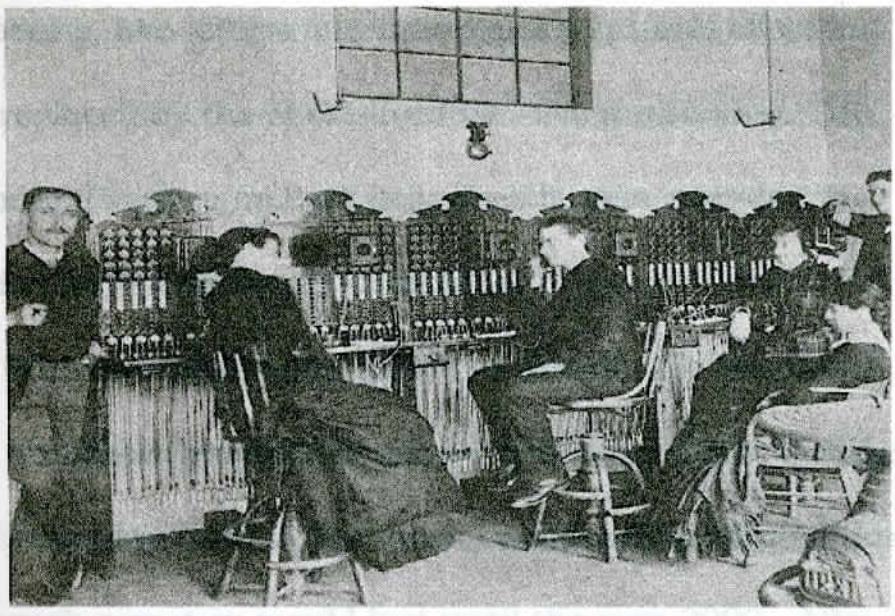

Fig. 5 "Tremont Office Boston, 1883" (Todd 16).

No coin phones were available for the first twelve years of telephony, but once they came into existence, they quickly became a necessity. Early pay phones could accept only nickels and were not connected to the long distance network. The first multislot coin phones were introduced around 1912.

Back in the winter of 1879-80, Dr. Moses Greeley Parker of Lowell, Massachusetts, recommended the use of telephone numbers in an effort to avert serious problems. As service grew, numbers had to be changed from single and double digits to three, four and five digits. The "metropolitan"

numbering, two letters and four digits went into effect but was soon replaced by the short-lived two-five numbering. The numbering system as Park describes it, was intended to function for a lengthy period of time:

> With two letters and a digit to identify the telephone number's "prefix" (the part which picks out a specific switching unit), it had been confidently predicted that such a system would last until the year 2000. After all, there are 540 possible prefixes, even allowing for the fact that a good many combinations weren't available... Two-five made it possible to have, theoretically, 540,000 different telephone numbers within a single area code, and there would be enough area codes in the U. S. and Canada so that every telephone in both countries would have a unique number: Three figure area code plus two letters plus five digits nearly equals infinity—or so it was thought. (134)

No one had foreseen the incredible demand for more telephones and more telephone numbers. A workhorse Centrex gobbles up an entire prefix because every extension to

this PBX (private branch exchange) gets a unique number of its own, so it can be dialed directly from outside. As this is only a small part of the total demand, ANC or All Number Calling was introduced consisting of seven digits, with a dash between the third and fourth (Park 134).

President Franklin Roosevelt instituted many changes including the implementation of a new agency, the Federal Communications Commission, to oversee activities of telephone, telegraph and radio communication. The FCC began with a philosophical viewpoint concerning capital investment on which telephone companies based their earnings requirements. They felt the original cost of plant "when first dedicated to public use" should be reflected instead of the actual cost to the telephone company that owned it. The courts upheld the FCC dictate but conceded to allow telephone companies to amortize losses over a ten year period instead of one year.

Consumers wonder why telephone companies advertise assuming they have all the business in town. An operating company's principal monopoly is of the unprofitable local

exchange service necessitating additional income from the sale of other products and services (Park 117). Executives realized that when times were tough, customers would choose to retain basic service and cut back on "extras". But without any extras, there was only one thing to cut back on and that was the basic service, POTS (plain old telephone service). FCC rulings forced telephone companies to establish different tariffs for local service when they ruled customers could connect non-Bell equipment to telephone company lines. Traditionally, tariffs had been based on the number of company owned telephones but this statistic became unrepresentative with the new ruling. Another measurement, EAA, "exchange access arrangements" was implemented. The EAA is generally thought of as the "main line," the connection from a customer's telephone or switchboard to a telephone company central office.

Government rulings forced the telephone companies into increased sales activity. Bell Laboratories and Western Electric produced new products and services to accommodate this effort. These included colored telephones, hands-free

speakerphones; Dataphone® service; the Princess® telephone; WATS; INWATS; Trimline®, phone with dial or keypad included in the handset; Call Director®, Touch-Tone® phone; ECS (Emergency Call System); Centrex and Centrex II; Dimension® PBX; Custom Calling Services and the Horizon® communication system (Park 120).

Then in 1956, the FCC decided that Bell might have an unfair advantage over its competitors and ruled that sales of equipment must be separated from operations. AT&T could sell or lease the equipment made by Western Electric only if a new subsidiary was created for that purpose.

The whole Bell System was restructured again in the late 1970s to meet the challenge of competition presented by Federal courts and commissions as well as the Department of Justice. Until 1968, no one had the right to connect his equipment to System facilities without System consent. However, the FCC abolished interstate tariffs relating to interconnection.

Even after divestiture and the transformation of the Bell System into AT&T and seven baby Bells, these regional companies constitute only seven of the 1,466 telephone companies operating in the U. S. The Bell System of telephone companies developed a reputation of dependability, ranking right behind the police and fire departments.

Increased regulation split the Bell System into numerous piece parts which the government felt would improve telecommunications and open the industry to competition. The Telecommunications Act of 1996 attempted to reinstate fair competition after a reasonable period in which "other" telecommunications companies were allowed to grow exponentially.

Regulation, good or bad, its impact on the industry and the Bell system in particular, will be explored in greater detail in Chapter IV. A ***Chronology*** of significant communications events appears in ***Appendix B***.

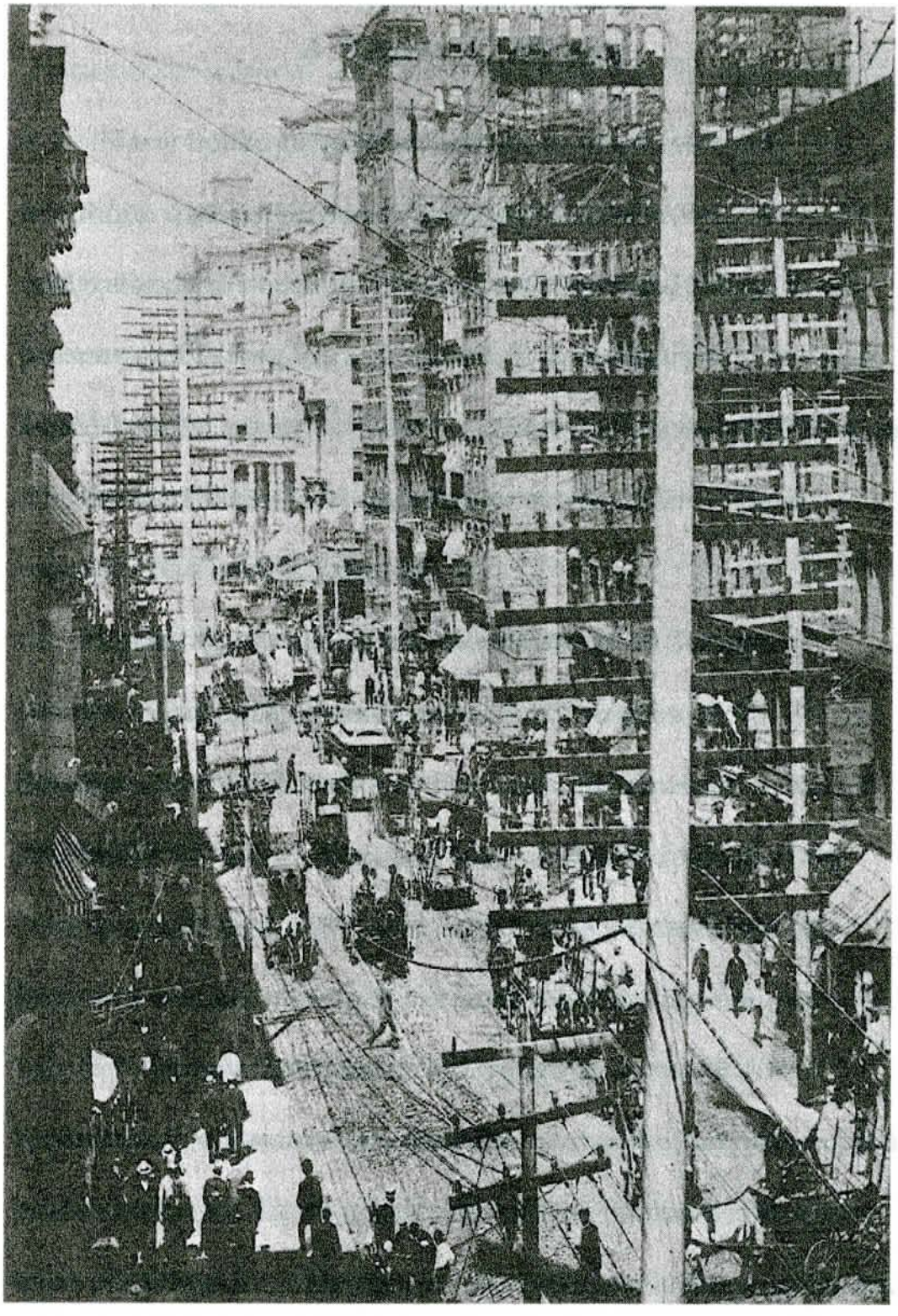

Fig. 4 "New York street scene—before wires were placed in cables beneath the streets" (Todd 35).

Chapter II: REVIEW OF LITERATURE

A "Capsule" History

Many books have been written on the history of telephone and its founder, Alexander Graham Bell. To understand telecommunications, as it is called today, in its present and future form, a thorough investigation of the past would best be served by books authored by former Bell system employees, Parks, Todd and Frailey among them. Their research has been invaluable.

Parks, in his book *Good Connections: A Century of Service*, is primarily concerned with the origins of Southwestern Bell. Parks retired from Southwestern Bell in 1978 after 27 years. His book is a wonderful history of the company and how it all came together as perceived by the men and women who built the business "line by line and pole by pole"—linemen, construction, repair and installation technicians, operators, service representatives, record keepers and customers. There are many antique pictures and excerpts taken from the diaries of several early key employees.

Parks feels strongly that service has always been a critical part of the Bell System and pioneers in telecommunications. No matter the weather, the devotion of the plant employees has avoided any major lapses in customer service—"...for they will serve as long as the public needs to keep in touch". While most of the early employees were unsure how to handle many situations, their determination and dedication has proven to be mutually rewarding both for the company as well as the customer.

Published in 1984, around the time of divestiture and not widely distributed, this book is a tribute to telephone people. Much of the information it contains was taken from interviews or old manuscripts tucked away in file drawers, much of it technical. Mr. Parks graduated from Princeton University and spent most of his career with the telephone company as a writer for *SCENE* magazine.

Kenneth Todd's book, *A Capsule History of the Bell System*, encompasses the entire history of the Bell system. It was particularly interesting to note that the Bell System had formed AT&T as a subsidiary which, due to legalities,

eventually became the parent company. Numerous inventions which have contributed significantly to our society such as talking films and the transistor came from the Bell Laboratories. The system was a major contributor and one time owner of a film making business, a broadcasting company and even Western Union until forced out of the businesses by the federal government. While Bell himself became pretty much removed from telephony, he continued to invent, but his concern for humanity was of primary importance in his life. Among his many inventions was even a respirator used to develop the iron lung. Alexander Graham Bell gave new meaning to life, especially for the deaf. He was a great humanitarian whose legacy lives on in the employee volunteer organization, the Telephone Pioneers of America.

This piece of literature covers all aspects of the Bell System from its origins, legal battles, regulation and organization. It is a compilation, edited from previously published Kenneth Todd materials.

In his book *In the Spirit of Service*, J. D. Frailey shows how strongly he believes the men and women of the telephone

industry have influenced the communications of this country. It is a book about people and how the "service ethic made this industry great".

Mr. Frailey spent twenty years creating and implementing marketing and customer service strategies in telecommunications. His co-author, Dr. James Velayas, has extensively researched customer service, employee satisfaction and organizational effectiveness.

Focus on the Phone Companies

More forward thinking went into the report done by The Insight Research Corporation, *The Future of the Phone Companies: Technology and Telecommunications in the Year 2000 and Beyond.* Published in 1995, the study represents an analysis of information generally available to the public from a variety of reliable sources such as analytical opinion. It provides alternate scenarios to describe change, milestones in regulatory and technical areas, opportunities created, and effectiveness of competition.

Its scope is the U. S. electronic communications markets to 2000 and beyond, focusing on the telephone companies which now include more than telephony. Insight forecasts that changes in market demand will create new and exciting opportunities in residential and commercial communications markets. While opportunities will grow exceedingly fast, senior management will need to focus assets on opportunities that produce the greatest return on investment while dropping others.

Insight believes that incompatible types of networks will seriously impede the growth of digital wireless services in the U.S., unlike European or Asian countries. In these foreign markets, a central carrier or standards group specifies the technology to be used. Furthermore, they believe that the competitive environment in the U.S. actually slows or stifles the growth of innovative networks, creating market confusion likely to doom emerging wireless technologies and thereby prolonging the usefulness of existing analog networks. Insight anticipates that by 1998, PCS network technology based on digital standards will emerge as the preferred U.S. national standard (Future 21).

The Insight Research Corporation considers the rapid growth of mobile communications and innovative network services, including the Internet explosion, to have surprised many observers. However, other markets such as the local exchange carriers' traditional core businesses experienced a far less impressive growth (Future 16).

Ten years ago the telephone companies were only concerned with providing basic telephony but the next decade

will require that various options be pursued. The focus will be on the provision of all possible in-region services including long distance, entertainment, wireless, information sharing; growth and experience in overseas operations; and the protection of their local monopolies (Future 58).

Present of the Future

Bill Gates', the famous CEO of Microsoft, is the author of *The Road Ahead.* His book begins with an overview of the 60's, when he was a young boy and first became interested in computers. He explains how the term "Information Superhighway" came about and how much its meaning is misunderstood. Gates has been instrumental in the industry since the age of 19 when he dropped out of Harvard, and much like Theodore Vail of Bell Telephone, he has had an uncanny knack for foresight as well as the ability to manipulate the future.

Through telecommunications and the invention of the PC, our generation and those of the future will be connected through the information superhighway, now in its early stages of development. Microsoft, as pioneers in software technology, has been instrumental in shaping the present and future of the information age. He believes that part of the hold up in the superhighway is the lack of bandwidth and that until fiber-optic cable is brought into enough neighborhoods, the

communications networks will be unable to accommodate all the new applications. Furthermore, Gates foresees the PC becoming even more instrumental in daily life:

> PC-like appliances will allow each of us to stay in touch over the highway with other people as well as with information. These will include digital replacements for many of the analog devices, including televisions and telephones, that surround us today...Although we don't know which forms will be popular, we know they will be general-purpose, programmable computers connected to the information highway. (70)

While the telephones of today will connect to the PC and TV networks, according to Gates, they will have small flat screens with tiny cameras. A stock picture or live video of the communicants will be transmitted. Furthermore, all information appliances are projected to have the same computer architecture appropriate to their varying functions.

Gates feels strongly that the wallet PC will be a major information appliance as it will fit conveniently into a pocket or purse. It will be able to display messages and schedules,

read or send electronic mail and faxes, monitor weather and stock reports, play games, take notes at meetings, check appointments, browse information or view pictures of the kids. The wallet PC will use unforgeable digital money instead of paper currency, linking into a store's computer to allow money transfers. But safeguards will be necessary in case of theft (Gates 74).

Today's computer, says Gates, is like a first day assistant needing constant instruction, and Microsoft is working toward softer software to make the computer more responsive to its user. But this is just the beginning of an exciting time in the Information Age when telecommunications now encompasses all forms of electronic communications. Relationships with nations and socioeconomic groups within nations will be altered by the availability of virtually free communications and computing.

According to Gates, "The power and versatility of digital technology will raise new concerns about individual privacy, commercial confidentiality, and national security" (251). Just like universal telephone service, the information society

should serve all citizens, not just those technically sophisticated or economically privileged. The rate at which technological changes occur is so rapid, the world and society will need to be prepared to accommodate that change on an almost continual or ongoing basis.

In an evolving economy, job categories are transformed constantly. For instance, at one time all telephone calls required an operator to process routing calls by plugging cables into receptacles. Despite the fact that the volume of calls is now greater than ever, most calls are now handled by automation and the duties of the telephone operator have changed dramatically. The PC and the information highway will reduce the need for middlemen, lowering costs and causing economic shifts. Gates theorizes that during this transition, an education that emphasizes general problem-solving skills will be the best preparation for being able to adapt.

Chapter III: SELECTIVE REVIEW AND EVALUATION RESEARCH

Where Do We Go From Here

Don Tapscott, author of *The Paradigm Shift*, claims a new era of technology is unfolding—one that not only parallels and is linked to changes in organizations but also broader world changes as well. This is what he terms the second phase of information technology. During this phase, he feels the business applications of computers, the technology itself, and the leadership for use of technology are all going through a transformation. He says "A new paradigm in the world geopolitical situation is occurring which is in turn creating a new international business paradigm" (13).

Three critical shifts in the application of information technology, in Tapscott's view, are from personal to work group computing, from system islands to integrated systems, and from internal to interenterprize computing. Tapscott explains his philosophy of the successful company of the future:

> The new technology of *extended reach* enables the recasting of relationships with external organizations. Computer systems between enterprises are beginning to talk to each other...The old technology cannot respond to the main requirements of today's world—globalization, quality, productivity, responsiveness, partnering, outsourcing, and cost control. (18)

Organizations must maintain a constant readiness to change as increasing and unpredictable competition from local and internal sources occur. This change must take place quickly and efficiently.

LANs, MANs, WANs, and VANs (information sharing networks) are an integral technological aspect of this era, enabling individuals, groups and departments to operate more effectively. Users can share information, send electronic mail, and co-author documents (Tapscott 138).

To meet the challenge of phase II of the information age, Tapscott goes on to say an organization should review its business environment from the perspective of the four new

paradigms—world, business, enterprise, and technology. Forces for change as he identifies them include:

- Stakeholder interests—financial expectations;
- Economic—shifting investment climate;
- Market—globalization and industry trends;
- Competitive—current competitive activity;
- Regulatory—trade barriers, taxes, regulatory agencies, unions
- Environment—pollution, waste management, energy;
- Labor—skills, costs, mobility, ethics;
- Social/Political—political stability, and
- Technology.

Once a current and future picture for a specified time period has been established, a determination on the future state of the organization is achievable.

"...Expect the unexpected" is Philip Kotler's theory. With the baby boomers advancing, there will be more focus on the needs of the older generation, the mature consumer, 55 and over. They will have money to spend and will be willing to pay for luxuries as seniors will have more youthful attitudes.

He projects that teenagers will be more mature and sophisticated due to the influence of computers and the information age. To this end, Kotler believes that people will want to be entertained wherever or whatever they are doing. Marketers will be forced to search out and target specific niches. "In niches there are riches" (Gibson 201). Companies will need to become "turbo marketers," moving faster in product development, manufacturing, distribution and service. The successful company will be the company that looks to the future for alternative scenarios in the marketplace, leads their industry in targeting their markets and produces the best value for the money in that market. Companies that are too focused on their current business will find it difficult to change and concentrate on innovation.

The information highway will make all communication simpler but it will not unfold smoothly before its users. There will be many obstacles and setbacks which will turn out to be learning experiences, leading us to many destinations. Bill Gates believes Antoine de Saint-Exupéry said it best when he wrote approximately fifty years ago:

> Transport of the mails, transport of the human voice, transport of flickering pictures—in this century as in others our highest accomplishments still have the single aim of bringing men together. Do our dreamers hold that the invention of writing, of printing, of the sailing ship, degraded the human spirit? (qtd. in Gates 274)

While personal computers, multimedia CD-ROM software, high-capacity cable television networks, wired and wireless telephone networks, and the Internet are important forerunners of the information highway, none represents the actual infrastructure. Low cost communications of the highway will empower people in more fundamental ways than even the PC revolution, since everyone will have access to most of the world's information.

More and more people will become telecommuters working from their homes instead of traveling daily to offices. Business people are now commuting via fax machines, telephones, and e-mail, but in the years ahead, millions more workers will make use of the information highway (Gates 152). Among the major benefits of the highway will be the

breakdown of boundaries and the promotion of a world culture, a sharing of cultural activities and values (Gates 263). But as business transacted on the highway increases and the amount of information stored there accrues, policies regarding privacy and access to information will need to be established and enforced by governments. The information highway will, however, provide choices to put us in touch with entertainment, information, and above all, each other.

> AT&T's chairman, Robert E. Allen is quoted as saying:
>
> As we approach the new millennium, the power of technology is indeed bringing people together. By making these technologies easy to use, we can bring more capabilities to more and more people. This promises grand opportunities for human progress in all its dimensions. (qtd. in Frailey 196)

Chapter IV: RESULTS

Regulation and Legislation

This study has traced how the formerly protected telephone industry becomes a part of an explosive industry where different network technologies, such as cable and direct broadcast satellite services as well as different content types and payment models, help to shape the destiny of the Information Superhighway ("Future" 1).

AT&T's chief, Theodore N. Vail amazed stockholders and peers when he said in their 1907 annual report he had "no serious objection" to public control over telephone rates. Frailey comments on Vail's philosophy concerning the overall relationship between the telephone industry and the government underscoring that it "evolved into what would become and remain for many years the accepted view of both industry and the government, that of a natural monopoly" (111).

In the 1910 AT&T annual report, Vail stated his opinion that the essence of correct regulation should encourage the highest possible standard in plant, the utmost extension of facilities and the highest efficiency in service. Rates should warrant the highest wages for the best service and reward high efficiency in administration. A certainty of return on investment should supply all the capital needed to meet the demands of the public. Frailey goes on to further quote Vail's comments that regulators should consider themselves juries charged with "protecting the individual members of the public against corporate aggression or extortion" and consider it their duty "to restrain and suppress...certain evils that have been ingrained in our commercial practices," as well as "restrain an indignant and excited public" (112). Park reports that Vail also felt regulation should serve the public by taking the place of competition (153).

Trusts set up by businesses late in the nineteenth century to gain monopolistic control of a market abused their power to eliminate competition, divide the market, control production and fix prices. This scenario led to the enactment

of antitrust laws to protect the public from such anticompetitive practices. The Federal Trade Commission was established in 1914 to enforce these laws for which the Sherman Act of 1890 set the ground rules, declaring restraint of trade illegal. The purpose of this act was to deny the monopoly company the benefits of its illegal actions; to render the firm's monopoly power useless and to restore competition. The courts resolved violations of the Sherman Act through various means—

- divestiture,
- dissolution, and
- triple money damages (Southwestern, Antitrust 4).

The Interstate Commerce Commission (ICC) exercised authority over telephone companies which crossed state lines until the Communications Act of 1934 was introduced by President Franklin Roosevelt. This bill assigned the Federal Communications Commission to regulate the telecommunications industry, to ensure that privately owned utilities operate in the public interest, and establish universal service as a national goal for the industry. The FCC was

empowered to oversee interstate and foreign telecommunications, including telegraphy, telephony, radio and eventually television as well as all other telecommunications services. Membership consisted of seven commissioners appointed by the President, subject to Senate approval, for seven year terms. Mandating the provision for universal service, this method specifically ensured availability to all people in the United States, providing an efficient, adequate, nationwide telecommunication service at a reasonable cost.

Empowerment of the FCC included a broad range of authority in interstate matters, such as—

- Compelling a company to furnish adequate service "upon reasonable request";
- Ruling on interstate rate changes for service as well as tariffs for new services;
- Prohibiting any unreasonable discrimination in rates or company practices;
- Passing on the construction, acquisition or operation of a new line or the extension of an existing line;

- Prescribing uniform accounting systems and depreciation charges, requiring records and reports;
- And, jurisdiction over consolidation of communications companies (Southwestern, Regulation 5).

Regulatory agencies were also established by the states to assure the public of adequate and efficient service at reasonable rates, approve rate structures and allow the private investor-owned utilities a reasonable return for their stockholders. Such state agencies became the Public Service Commission (PSC) or Public Utilities Commission (PUC). Urged on by public demand, these state commissions ordered the Bell System to take over unprofitable exchanges while simultaneously forcing the forfeiture of other more desirable operations. Moreover, every significant action by the telecommunications company became subject to investigation by these state commissions.

A natural monopoly, as referred to by Mr. Vail, eliminates the duplication of facilities and provides a service which can be achieved at a lower cost and greater efficiency by one company than by two or more competitors such as

water, gas, electricity and telephone companies. The Department of Justice, however, filed an antitrust suit against the Bell System for anticompetitive practices in 1974. When the U. S. government and AT&T reached an agreement on January 1, 1984, to break up the Bell System into eight pieces (AT&T, Ameritech, Bell Atlantic, Bell South, Nynex, Pacific Telesis, Southwestern Bell, and U. S. West), and further separating these entities from Bell Laboratories and Western Electric, for many, it was unthinkable and incomprehensible. Over one million employees of the "natural monopolies" were in shock, uncertain and confused as to their future. Changes took place rapidly, divestiture passed, and the baby Bells struggled through a transition period filled with obstacles. AT&T would no longer have end to end responsibility for their products and services and the Bell operating companies would be unable to provide long distance, manufacture telecommunications equipment or provide information services (The information services restriction was lifted, however, in July 1991.) (Frailey 182).

Though the federal government took possession of the Bell System in 1918 to enforce a wartime act of Congress, when World War I ended, litigation was necessary before the company was returned to the private sector in 1919. During this time, service declined while long distance rates increased up to twenty percent. The subject of government takeover was never approached again during subsequent wars.

A publication issued by Southwestern Bell reports that regulatory policy has always required reasonable rates and fairness in the provision of service. Even during the monopoly era of most of this century, policies ensured local service was available to as many people as possible. In line with this goal, rates for long distance and discretionary services were set well above cost to support affordable residential service (Southwestern, Competition 2).

Regulatory and judicial rulings have managed to eat away at the Bell System's ability to protect and preserve its business. The Carterphone ruling in 1968 was of major significance according to Park:

> ...the first breach in a wall of Bell System principle erected decades before—'You can't hang your washing on our clothesline'...the little crack...became a gap and through that gap gushed a wave of competition...The most lucrative portion of the telephone business is long distance service, operating companies had used their share of long distance revenues to make up for losses in provided local service. (239)

Competitors could now use Bell telephones as terminal points, select the high volume routes for their service and undercut Bell's (PSC ordered) rates. Even with these lower consumer rates, competitors could be extremely profitable since the AT&T rates were based on nationwide average costs which included local service subsidies. Bell received no challenges from the competition for low volume, unprofitable routes (in rural areas) mandated by the government. David Park offers his opinion that "...the traditional telephone business was being bled of its financial strength" (239).

This practice continues today and increases with competition. Competitors in today's market are subject to

less regulation creating an advantage over the Bell companies. In a contest to win and keep customers, they can set their own prices as the market dictates, react more quickly to changes in the marketplace, and pick and choose their customers (Southwestern, Competition 2).

"The Year of the Telephone" was highlighted by the signing of the "Telecommunications Act of 1996." Congress spent four years debating the overhaul of outdated regulations in the telecommunications industry. The FCC is in the process of implementing this law which provides for increased competition, more consumer choices, lower prices, technological advancement and increased U. S. competitiveness.

In the next few years, the FCC will need to make decisions on other major issues such as how to promote HDTV; how to stimulate new PCS services; how much to open communications services markets; how to maintain universal access to phone service; and, how the FCC can meet its need to install state of the art equipment ("Future" 56).

Competition in the Regulatory Arena

The FCC chief, Chairman Reed Hundt, commented recently that regulators do not have sufficient information to determine what it costs to deliver phone service in rural and other high-cost areas and would work with state regulators to calculate costs while installing an interim system. Although Congress ordered the FCC to complete a new universal service plan by May 8, Chairman Hundt has requested a postponement.

SBC's Intranet SPECIAL REPORT dated March 4, 1997 (see Appendix A) reviews the following basic issues of the Telecommunications Act of 1996 as well as the intent of Congress—

- Interconnection—
- Universal Service
- Access Fees
- Bell Operating Companies in Long-Distance Service

Furthermore, The SPECIAL REPORT goes on to further summarize:

- Implementing the Vision
- Basic Facts: The Telecommunications Act of 1996
- Basic Questions & Answers: Telecommunications Deregulation
- Fact Sheet: America's Local Telecommunications Network
- Key Facts
- Interconnection: Establishing Fair Rules for Competition
- Universal Service: Providing Low-Cost Basic Telephone Service for All
- Access Fees: Ensuring Continued Investment in the Network
- Key Telecommunications Terms
- Quotes from Members of Congress, Courts and local Phone Companies
- Quotes from Long Distance Companies
- Telecommunications Reform: A Timeline
- About USTA (Southwestern, Quick 1)

When the Regional Bell Operating Companies (RBOCs), were created in January 1984, it was assumed their natural monopolies would protect them from competition and that regulations were needed to limit their power to unfairly raise prices and enter new markets. Since then three major types of competitors have eroded parts of the RBOC's markets...

- Alternative access carriers...
- Cable TV companies...
- Expansion minded RBOCs... ("Future" 60)

In response to the latter, the FCC and court rulings attempted to limit rights to own cable networks and innovative electronic services, make investments in operations outside their regions, and form alliances between RBOCs ("Future" 60).

Traditional companies competing in the telecommunications marketplace today include competitive access providers (CAPs), wireless competitors, cable television companies, WATS and 800 services, long distance companies, paging, directory, messaging, operator services and internet

providers. Non-traditional competitors in market niches encompass computer firms, construction companies, electric utilities, newspaper publishers and the retail industry.

Lesser regulated competitors have advantages over the baby Bells since they have the freedom to set prices according to market demand, they are able to react quickly to the changing marketplace and can be selective about their customers. Competitor's services are offered without geographic or price restrictions enforced on the BOCs while utilizing Bell system facilities.

Although the market is expanding, since 1986 the number of competitors for telephony in the state of Missouri alone has doubled every two years. Kim voices his view of the competitive environment:

> ...winners of competition... will be those firms that can change the way competition occurs, not those who figure out how to shave some points off operating costs. To do this, management must change the business and create new markets instead of sharing the old ones.

Increased revenues will occur on high value and bundled services, not local access. (50)

An environment of wireline competitors with equal opportunities, free to pursue the consumer with the best products and services available in an open market is just the beginning of fair competition. "Telecommunications companies will need to bridge the gap between the information-rich and the information-poor, helping to equalize opportunities" (Ameritech 1).

"Electronic data superhighways" can be accessed through coaxial cable and fiber optics allowing companies to deliver video, voice and data to the home or office. New technologies offer economical benefits especially in the field of Distance learning where students can take advantage of programming usually considered out of reach by many school systems or students who cannot attend school on a regular basis. Distance learning allows teachers to work with distant classrooms or students at home using video windows; information services opens doors of rural and urban classrooms to libraries and other global information sources ;

language translation for multilinqual classes; converting voice to text and text to voice for disabled students; video homework on a home terminal where students prepare homework for automatic grading.

Information services offered by telephone companies are particularly beneficial in rural areas, to the elderly and disabled citizens. These services include electronic directories; grain elevator and transportation rates for farmers, to boost their profit margins; farm programs to track market conditions and contract opportunities; farm management programs to help with farm maintenance schedules, crop management information, and other reference programs; state and county assistance programs and job banks; educational programs, including video homework and distance learning for the undereducated and disabled; comparative shopping and ordering groceries, medications, repairs; local community events calendars; automatic safety calls to monitor well-being; medical and health information; pulse rate and blood pressure monitoring, and special senior

networks covering educational, entertainment, and news services (Ameritech 5).

> The telephone companies have enormous strengths that can assist them in establishing profitable positions in the businesses spawned by new technologies. Perhaps the most important single strength is the new applications will not be based on broadcast, but on switching and transaction processing. The telephone companies today are the only organizations experienced in handling millions of user-oriented, real-time transactions per hour. This advantage, together with careful planning can lead them to a successful future. (Sirlin 24)

Chapter V: DISCUSSION

Results and the Future of Telecommunications

Bill Gates of Microsoft fame believes we are beginning a great journey of uncertain destination where the major changes will be in how people communicate with each other. He predicts there will be both pros and cons:

> The benefits and problems arising from this upcoming communications revolution will be much greater than those brought about by the PC revolution...Some people think the highway—also called the network—is simply today's Internet or the delivery of 500 simultaneous channels of television. Others hope or fear it will create computers as smart as human beings. (Gates xi)

At any rate, the communications revolution is just beginning and will take place over several decades. The term "Information Superhighway" arose from the comparison of connecting all U.S. computers with the gridding of the country with interstate highways during the Eisenhower era. Gates,

however, sees it as the ultimate marketplace or supermall where social animals will "sell, trade, invest, haggle, pick stuff up, argue, meet new people and hang out." Digital information of all kinds, not just as money, will be the new medium of exchange in this market.

Fiber optic cable will be necessary to provide adequate bandwidth or high bandwidth service for the new information highway infrastructure which is why it is unavailable today. In fiber optic communications, signals are converted to light form and fired by laser through very thin (2,000ths of an inch) insulated glass or plastic fibers. Fiber optics provide many advantages over copper cable systems currently in use over most of today's telephone networks. It is lightweight for aerial purposes, small, fast, and superior in bandwidth capacity. It can carry as much traffic as 1800 twisted pairs of copper wire. There simply isn't sufficient bandwidth in today's communications networks for all the new applications.

Unfortunately, fiber is also expensive. This means that until fiber optic cable is put into enough neighborhoods, there will not be a working highway (Gates 31). But the demand for

high bandwidth services such as high speed data transmission, interconnection of LANs, interactive video and teleconferencing, delivery of entertainment video, video imaging services, and HDTV (high definition TV) services, will feed the deployment of fiber optic cable (Vanston 19).

Most American homes are currently attached to two dedicated communications infrastructures: telephone lines and television cables. The confluence of technological advances in both communications and computers, generalized into a single digital-information utility, will bring about the arrival of the information highway. Telephones will connect to the same networks as the PCs and TVs but the phones will be equipped with small screens and tiny cameras for video.

Today "synchronous" broadcasting means that viewers must synchronize their schedules to coincide with the time of the broadcast. The same is true of a telephone conversation unless a message is left on an answering machine or a tape is made of an incoming broadcast. Then an "asynchronous" form of communication is created. The information highway will allow more personal control in our schedules, increasing

our choices. The magical capabilities of the highway represented by technology will make our lives easier. While television will continue to broadcast as today, consumers will have the ability to select their own viewing schedules. Programs and other digital information will be stored on "servers", which will provide information for use anywhere on the network (Gates 67).

The wallet PC, which Mr. Gates believes everyone will carry in a pocket or purse, will be able to display messages and schedules, send electronic mail and faxes, display weather forecasts, stock reports and even sport sophisticated games as well as unforgeable digital money instead of paper currency. Even bills will be sent to the wallet PC. Televisions, personal computers or other information appliances will be voice activated.

Spatial navigation will allow the user to go where the information is by interacting with a visual model of a real or imagined world. Some software products are currently utilizing this format. The user can jump into a map and

navigate down a street or tour a museum or gallery as if physically present.

Virtual reality or VR will allow the user to go places and do things as never before. Gates points out what will be required:

> ...two different sets of technology—software that creates the scene and makes it respond to new information, and devices that allow the computer to transmit the information to our senses. The software will have to figure out how to describe the look, sound, and feel of the artificial world down to the smallest detail. (131)

Agents will provide guidance through the highway, memorizing past activities, selecting patterns of use and getting smarter each time it is used. It will serve as an assistant who learns from its experience with the user, providing helpful suggestions based on its stored knowledge (Gates 84).

Highway construction will be a massive project, requiring installation of physical infrastructure such as fiber optic cable, high speed switches and servers as well as

software platforms. But, there will also be other requirements according to Gates:

> The highway's platform will also have to support many different kinds of computers, including servers and all the information appliances...customers for much of this software will be the cable systems, telephone companies, and other network providers, rather than individuals, but consumers will ultimately decide which succeed. The network providers will gravitate toward the software that offers consumers the best applications and the broadest range of information...Today's estimates put the cost at about $1,200...depending on architecture and equipment choices, to connect one information appliance (such as a TV or a PC) in each U. S. home to the highway. This price includes running the fiber into every neighborhood, the servers, the switches and electronics in the home. With roughly 100 million homes in the United States, this works out to around $120 billion of investment in one country alone. (90)

Internet access is already becoming highly competitive as large phone companies around the world enter the business, dropping prices significantly. CompuServe and America Online will include Internet access as part of their charges. By using the telephone company network, special lines and switches are available for integrated services digital network or ISDN which transfers voice and data ten times faster than digital simultaneous voice data (DSVD). But these are only interim technologies for mid-band applications as the full highway will require broadband for high-quality video (Gates 91).

A hybrid communications system will combine elements of synchronous and asynchronous communication utilizing first DSVD and later ISDN telephone connections to permit simultaneous transfer of voice and data. Development of such a system will come about well before the full information highway is available.

Cable and phone companies will progress along four parallel paths says Gates.

- Each will go after the others' business. Cable companies will offer telephone service, and phone companies will offer video services.
- Both systems will provide better ways to connect PCs with either ISDN or cable modems.
- Both will convert to digital technology in order to provide more television channels and higher quality signals.
- Both will conduct trials of broadband systems connected to television sets and PCs. Southwestern Bell is currently conducting such a trial in Richardson, Texas.

Investment in digital network capacity will be stimulated by this progression as telephone companies and cable television networks compete to be the first network provider in a neighborhood (Gates 103).

Other sources no longer see the telephone industry as "a giant conduit transporting signals from end to end". Services such as ISDN (Integrated Services Digital Network), messaging, information services, entertainment networks, cellular operations and future video on demand as well as

other entertainment options illustrate the convergence of transport and content services ("Future" 5).

The Insight Report further illustrates the dimensions of communications services:

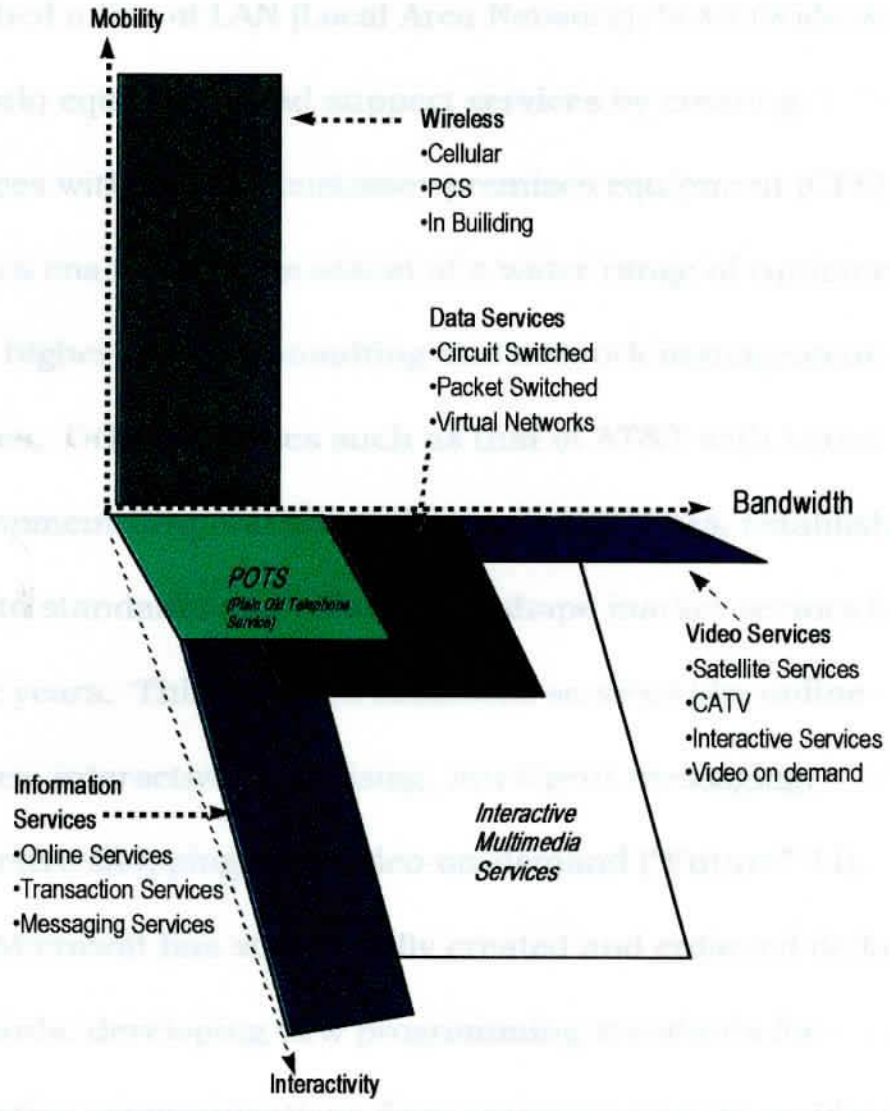

Figure 6. Telephone Company Expansion and Competition ("Future" 7)

Joint ventures and partnerships may be necessary to access new areas and gain name recognition. It will also

provide some revenue from new enhanced services and expand the carriers' market share. U. S. West set up a small business unit to administer to the public and establish future needs for PC related equipment and LAN services. They then launched a line of LAN (Local Area Network)/WAN (Wide Area Network) equipment and support services by creating alliances with over 20 customer premises equipment (CPE) vendors enabling the provision of a wider range of equipment and a higher level of consulting and network management services. Other alliances such as that of AT&T with Lotus Development Corporation producing Lotus Notes, establishes de facto standards and alliances to shape market sectors in future years. This includes enhanced services like online services, interactive advertising, intelligent messaging, interactive shopping, and video-on-demand ("Future" 11).

Microsoft has successfully created and enforced de facto standards, developing new programming standards for interactive communications from entertainment to residential and commercial video conferencing, shaping the future of the telephone companies and their competitors. To become a key

player in electronic banking and gain control of its successful personal financial management software, Microsoft purchased Intuit Corporation ("Future" 13).

But, the Internet and other transitional technologies will eventually be contained within the real information highway. It will combine the best qualities of both the phone and the cable network systems like the private connections of the telephone network which is fully two way, and the cable television network which is high capacity, allowing sufficient bandwidth for multiple television or personal computers in a single household to connect simultaneously to different sources.

Telecommunications and the new technologies of the future will be incredibly exciting, impacting every aspect of life, how we live, learn, work and play. Its already begun in the expanding global economy of the Information Age.

The Insight Report goes on to say that it considers the factors below as just a few of those likely to mold the changing communications industry as it enters the next millennium:

- Distinctions between telephone companies and technology companies will vanish.
- Companies that shape wireless standards will gain competitive advantages.
- Wireless services from cellular digital packet data (CDPD) and cellular to future personnel communications services (PCS) will be a major growth opportunity.
- Over 50 million households will have PCs.
- Alliances and joint ventures will become critical to success.

Furthermore, there are currently four basic technological advances effectively transforming the telephone network.

- The migration from analog to digital switching and transmission. As the basis for many enhanced services, digital technologies are more reliable and cost less.
- The number of home or residential PCs is increasing.
- Digital technology is essential. Wideband services are becoming available on larger networks (LANs, MANs and WANs).

☎ Technical advances such as wideband transport options enable new services and restructure the telephone industry ("Future" 28).

Gary Hamel in his chapter, "*Reinventing the Basis for Competition*", states the future cannot be created using the old strategy tools or by simply catching up to where others have been to stay in the game. Winners will be those with the ability to invent fundamentally new games. Transforming leadership and the organization is strictly a secondary problem compared to the industry and customer transformation. He goes on to say, "If a company is interested in understanding the future, most of what it needs to learn about the future it is going to learn outside of its own industry" (Gibson 82).

Andy Grove, Intel's President and CEO, in June 1994, commented that the PC is getting difficult to avoid due to the combination of mass production and adaptability. Mass produced high performance computers along with new high speed communications lines will dramatically change the way people work together. The reality of the Information Highway,

the relationship between the modern mass produced computer (the PC), and increasingly high bandwidth communications have become interdependent. Bigger communications pipelines require more powerful computers to handle the data flowing through the pipeline. In line with this thinking, more powerful processors need bigger pipes to transmit the data. In the 1990s, this continuing computing and communications spiral will be the determining factor in both industries. More than 100 million PC units are expected to ship worldwide each year (more than cars or TVs). The PC is at the center of a world that is fast becoming digital, and soon to be linked by a powerful communications infrastructure ("Future" 32).

A demographic study conducted by the Insight Reports and taken from U. S. Department of *Commerce Statistical Abstract* anticipates the future of American Households.

U. S. Household Demographics (Millions)					
	1985	1990	1994	2000	CAGR
Households	86.7	94.2	99.8	105.9	1.2%
Households with TVs	85.2	91.2	97.3	103.8	1.3%
Households with Phones	79.6	87.6	94.5	98.7	1.2%
Households with PCs	3.5	15.1	41.0	50.8	12.9%
Households w/Cable TV	31.3	51.8	61.2	71.1	3.2%

Notes: 1. Households may have more than one of an item; for example, there were 45 million PCs in use in homes in 1994. 2. Cable TV households are defined as subscribers to at least basic cable TV service. 3. CAGR% is the compound average annual growth rate from 1990 to 2000.

Figure 7. Demographics of U. S. Consumer Markets ("Future" 42).

Markets are driven by customer needs and not by technology or corporate marketing desires. Telephone companies and other carriers should base their marketing strategies on this premise, focusing on the three major customer groups: Information workers, mobile workers and consumers.

Gates sees a major benefit of the PC revolution in the way it has empowered people but the low cost communications of the highway will empower in an even more crucial way. Technology-oriented individuals will not be the only beneficiaries of this revolution. As more computers connect to high-bandwidth networks, and software platforms

provide foundations for great applications, everyone will have access to most of the world's information (Gates 111).

But the next millennium, as forecasted by Insight Corporation, will bring other changes in the telecommunications industry as well:

- Consolidation of carriers will narrow standards such as in the wireless arena and companies that shape those standards will gain competitive advantages.
- Wireless services from cellular digital packet data (CDPD) and cellular to future personnel communication services (PCS) will be a major growth opportunity.
- By the year 2000, more than 50 million homes will have PCs for work, self improvement and entertainment.
- The late 90s will see PCs used more for entertainment, eroding the dominance of the analog receive-only TV.
- Most carriers will turn to value added, interactive services and home entertainment to regain lost profits and reduce customer turnover.

- Alliances and joint ventures will become critical to success as carriers begin to manage content and related enhanced services ("Future" 15).

SBC Communications, Inc., considered the most successful and aggressive of the Regional Bell Operational Companies, has developed into a fully diversified telecommunications company with customers in 13 states and eight countries. Mr. Gene Klodginski, Executive Director-Budget Analysis at Southwestern Bell Telephone, stated in a recent interview that companies should stick with what they know best. He recalls that at divestiture, AT&T wanted to get into the computer business and did so unsuccessfully. Southwestern Bell, however, is evolving new telephony type products in addition to expanding fields of expertise. Currently in the developmental stages at SBC's Technology Resources Laboratories are six such state-of-the-art areas: Broadband Delivery Systems, Intelligent Networks, Video Networks, Voice Technology, Information Technology, and Wireless Networks.

He went on to state that while cable TV and phone companies are attempting to get into each other's businesses, many of the Regional Bell Holding Companies are selling off their interests in cable companies like that of U. S. West and Times-Warner Cable. He does not agree that companies that set standards gain market advantages since the possession of technology is no guarantee of market savvy but he believes distribution channels or agents are needed to compete aggressively.

Southwestern Bell or SBC Communications obviously believes in joint ventures and alliances as indicated by today's global economy. SBC has become a world "telecommunications power" forming alliances such as that with a Malaysian company in South Africa. Klodginski feels each country has its major players in the field which can provide leverage to outside investors. Other good examples of alliances formed by SBC would be the merger with PacTel, the recent alliance with Lucent Technologies, and the pending talks of merger back into AT&T.

The future telecommunications industry, as Mr. Klodginski sees it, will consist of only four or five major players along with numerous minor competitors. While the market will grow, the major share of the pie will be controlled by these larger companies with the means to succeed in this capital intensive business.

High bandwidth services will definitely be market driven. To this end, SBC is currently conducting a residential broadband trial in Richardson, Texas. Based on a fiber-to-the-curb architecture, the trial has evolved from a market trial of video services to a technical trial of integrated voice and data services. By the introduction of broadband services, SBC will "strengthen and protect" its core business—telephony (Southwestern, Report 4). However, Klodginski contends that consumer demand along with a desire to derive more value for the service will require continued improvement in technology and pricing.

Ten years ago, telephone companies were concerned entirely with the provision of telephone service but with the advent of competition, new markets have been created. Now,

such words as fax, modem, cellular, lap-top computer, internet, e-mail, voice mail, ATM, Caller ID and cordless telephones have invaded our vocabulary. Products and services unheard of previously are in constant daily use (Taylor, Business 1).

Bandwidth is the key. While most of the technology needed during the next century is available today, a focus on the means of delivery and coordination will be critical to provide a "meaningful sharing of knowledge to utilize it at maximum capacity." To be successful, companies will need to look past technology, focusing on applications, developing creative solutions to problems yet to be faced by consumers (Southwestern, sbc.com).

Ten years from now, ISDN, 3-D imaging, full-motion video calls, on-demand video, mobile satellite systems, broadband and software agent will be familiar terms used by our children (Taylor, Business 5).

Welcome to the Communications Age.

Quick Signal ...

An Intranet exclusive for all employees of SBC Communications Inc.

SBC Intranet SPECIAL REPORT: Telecom reform

SBC is a member of the United States Telephone Association (USTA). Below is a special USTA package of information on telecommunications reform. We present it here as an educational resource for SBC Intranet users. -- *The Editors*

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Issues At-a-Glance: Telecommunications Act of 1996
(a brief summary of select telecommunications issues and the intent of Congress in the Telecommunications Act of 1996)

A new era of telecommunications began on February 8, 1996, when President Clinton signed the Telecommunications Act of 1996. After four years of debate, Congress produced a bill which called for a comprehensive overhaul of outdated regulations in the telecommunications industry. The legislation provides for increased competition, more consumer choices, lower prices, technological advancement and increased U.S. competitiveness.

Implementation of the new law is underway at the Federal Communications Commission (FCC). Outlined below is a side-by-side analysis of the stated intent of the Act pertaining to major issues including interconnection, universal service, access fees and competition in the long-distance market, and the implementation of these elements thus far.

INTERCONNECTION

Interconnection is the process of linking one network to another so that telephone calls or data can be transmitted. Without interconnection, telephone users would only be able to talk to other subscribers of their local telephone company.

The Telecommunications Act of 1996 directed all telecommunications carriers to interconnect directly or indirectly with other carriers, permitting long-distance companies and cable companies to compete in the local phone market. In order to gain access to the local phone market, these long-distance and cable companies must interconnect with the local phone networks that have been built, owned and

operated by local phone companies.

The Telecommunications Act of 1996:	FCC Implementation of Interconnection:	Dangerous Implications/Consequences of FCC Interpretation:
The Act empowers states to determine whether charges for interconnection are just and reasonable.	FCC rules are wrong because they usurp state power. The FCC's implementation order failed to follow the intent of Congress, which empowered the states -- and not the FCC -- to set interconnection rates.	**The rules undermine the incentive for incumbent local telephone companies to continue to invest in the local phone network upon which everyone depends, and create no incentive for new entrants to invest in facilities-based competition.**
The Act calls for no mandated cost model or methodology, and the FCC is not required to establish a pricing methodology to be used by the states in establishing interconnection charges.	FCC rules are wrong because they set fixed pricing rules. The Order precludes private negotiation between parties, which the new law required.	**The rules completely disregard the billions of dollars local telephone companies have invested to create the world?s most sophisticated network.**
The new law provides that the charges be based on the cost of providing interconnection with a reasonable profit to be included in the charge.	The FCC's pricing methodology is based on the hypothetical costs of an extremely efficient network that does not currently exist.	**The rules would give long-distance companies an unfair pricing advantage in entering local service markets by setting the interconnection prices lower than what it costs the local telephone company to provide the service. Long-distance companies have already said that they plan to target only the most profitable customers and neglect those who are more costly to serve.**
The law provides for exemptions or modifications in standard interconnection requirements for any local telephone company that would be unfairly economically burdened or is technically incapable of meeting unbundling requirements.	The rules ignore exemptions for unbundling requirements and violate the law which established certain conditions under which interconnection and unbundling requirements are imposed on rural and small telephone companies.	

Universal service means simply making telephone service available at an affordable price to anyone who wants it. The definition is likely to evolve as the demand for advanced telephone services increases. The Telecommunications Act of 1996 requires that universal service be preserved and advanced. The new law also calls for the FCC to create a Federal-State Joint Board comprised of three federal representatives, four state representatives, and a state-appointed utility consumer advocate to recommend actions to the FCC and state commissions for the preservation of universal service.

The Telecommunications Act of 1996:	**FCC Implementation of Universal Service Requirements:**	**Dangerous Implications/Consequences of FCC Interpretation:**
The Telecommunications Act of 1996 required that the goals of competition be balanced with the need to preserve and to increase universal service.	Proposed rules do not compensate incumbent local telephone companies for their actual cost of providing service.	**The Federal-State Joint Board failed to: 1) address how incumbent carriers could recover costs of their investments in a competitive marketplace; 2) recommend a support mechanism; and, 3) ensure competitively neutral application of the rules.**
The Act requires that universal service be financed by all providers of interstate telecommunications on an equitable and non-discriminatory basis.	The Federal-State Joint Board's proposed rules use: 1) a forward-looking cost proxy model which is based on a hypothetical network that doesn't exist; and, 2) a benchmark that intentionally inflates revenues.	**Long-distance companies have already indicated that they plan to pursue large-market, lucrative customers and avoid those who are more costly to serve.**
There must be specific, predictable and sufficient mechanisms established by the FCC to preserve and advance universal service funding.	FCC rules will allow new entrants to use the network at a price substantially below cost and target only the most profitable markets.	**Currently, subsidies -- from businesses and urban users -- keep rates low. If the FCC interconnection rules take effect, local phone companies could be left with a higher percentage of high-cost users, making it difficult to generate sufficient revenues to provide universal service. This flies in the face of Congressional intent in the Act because universal service will not be maintained.**

ACCESS FEES

Access Fees are the charges long-distance companies pay for using local telephone networks to originate and complete calls. These fees help to keep residential service affordable.

The Telecommunications Act of 1996:	**FCC Implementation:**	**Dangerous Implications /Consequences of FCC Interpretation:**
	In late December 1996, the FCC, in a proposed	

The Telecommunications Act of 1996 requires the FCC to reform access fees and to make them explicit.	rulemaking, outlined two ways of reforming access fees: One option would have the FCC resize and restructure the access charges. The second option would allow the marketplace to do it. The FCC also suggested that they could combine the two approaches. The comment period is currently open and final rules are expected in early May.	**Local telephone companies use access fees to support universal service and the maintenance of the local telephone network. In addition, access fees cover the real cost of service. If the FCC makes cuts in access fees, local phone companies will have less money to provide these vital services.**
		The access structure adopted by the FCC should allow incumbent local telephone companies to flexibly price their access services. Market forces should determine access prices which may include reductions after the removal of the universal service support.
The goal is for all users to pay a fair and reasonable access fee for calls that originate or terminate on a local telephone company's network.	The FCC proposals for access fee reform could have the effect of exempting long-distance companies from contributing their fair share of maintaining and upgrading the existing network while continuing to use it.	**Over the years, incumbent local telephone companies have delayed recovery of their investment in the local telephone network in exchange for a maintained monopoly marketplace. In a competitive marketplace, these companies must be permitted to recover the undepreciated levels of investment. This will provide an incentive to the local telephone companies to continue investing in upgrading and maintaining the network.**

BOCs IN LONG-DISTANCE SERVICE

The Telecommunications Act of 1996 allows the regional Bell Operating Companies (BOCs) -- the companies formed by the divestiture of AT&T -- to enter the long-distance market. The BOCs must submit an application to the FCC and the Commission has 90 days to make a final decision. The FCC must consult with the Department of Justice (DOJ) when evaluating the applications.

The Telecommunications Act of 1996:	**FCC Implementation of BOCs in Long-Distance:**	**Dangerous Implications /Consequences of FCC Interpretation:**
According to the Act, the	Currently, the local telephone companies are in the process of	

Bell Operating Companies (BOCs) are permitted to enter the long-distance market in their service area after removing entry barriers to competition in the local telephone market. The Act requires the BOCs to meet a 14-point "competitive checklist" (listed below) for allowing competitors to use their local networks and a public interest test.	completing the 14-point checklist. The FCC has hinted that they believe since the interconnection rules are on hold, the BOCs cannot meet the competitive checklist. The FCC and DOJ have also suggested that they will use a market share test -- a certain number of competitors in a market, statewide competition, etc. -- to determine whether a BOC has met the competitive checklist.	**The new law is clear -- a local market is open if there is an interconnection agreement and new competitors can enter under the terms of that agreement. The FCC and DOJ cannot be allowed to rewrite the law. The public interest statute cannot be used to hold up competition. BOCs entry into the long-distance market will provide tremendous benefits to consumers.**

The 14-Point Competitive Checklist

1. Interconnection
2. Nondiscriminatory access to network elements
3. Nondiscriminatory access to poles, ducts, conduits and rights-of-way
4. Local loop transmission from the central office to the customer's premises
5. Local transport from the trunk side of a wireline exchange carrier switch
6. Local switching unbundled from transport, local loop transmission or other services
7. Nondiscriminatory access to 911, directory assistance and operator call completion services
8. White page directory listings for customers of the other carrier
9. Nondiscriminatory access to telephone numbers
10. Nondiscriminatory access to databases and signaling necessary for call routing
11. Interim number portability
12. Nondiscriminatory access to services or information to allow the requesting carrier to implement local dialing parity
13. Reciprocal compensation arrangements
14. Telecommunications services available for resale

Implementing the Vision

Overview: Local telephone service in a competitive environment

Local companies are ready to compete

Competition in a free marketplace is the surest route to innovative products, low prices and outstanding customer service and choice. That's why Congress passed the Telecommunications Act of 1996 – so American consumers would enjoy the benefits of competition in long-distance and local telephone service, cable television and other telecommunications markets.

America's local telephone companies supported this legislation and are eager to compete in all areas of telecommunications. But thousands of details must be worked out by state and federal regulatory agencies before the competition begins. Unfortunately, serious problems have emerged at the federal level.

Interconnection

New competitors entering the local phone market must have a way to connect to potential customers. They must either build their own network of wires and call-routing computers, or hook up to the local telephone company's existing network, a process called interconnection.

The U.S. Circuit Court of Appeals placed a wake-up call to the Federal Communications Commission (FCC) when it blocked the FCC's rules that would have granted deep discounts to new competitors so they could resell incumbent local exchange services at less than actual cost. The FCC's rules would have given the big long-distance companies an unfair pricing advantage in entering local service markets by setting the price lower than what it costs to provide the service. This deprives consumers of the benefits of full and fair competition.

Any attempt by government to grant new entrants an unfair advantage through the imposition of huge price reductions to multi-billion dollar companies is unacceptable. In a truly competitive marketplace, new entrants should only be permitted to buy services at a level that meets the cost of providing those services. Otherwise, there will be no incentive for incumbent local telephone companies to invest in maintaining and expanding the network, which will eventually limit customer choice and artificially drive prices up.

The FCC order also disregarded Congress' clear intent that states should continue to oversee local telephone service, as they have for more than 100 years. In fact, it was utility commissioners from around the country who sounded the first alarms about the FCC's order. The National Association of Regulatory Utility Commissioners (NARUC) warned, prior to the order being issued, that federal policies should "complement, not impede or duplicate, state efforts to foster competition."

States should be determining the price at which local phone companies allow new entrants to interconnect with the local network -- and again, that price should cover the cost of providing the service.

Our members of Congress who drafted the Telecommunications Act -- Reps. John Dingell (D-MI), Billy Tauzin (R-LA), Rick Boucher (D-VA) and Dennis Hastert (R-IL) -- have also sharply criticized the FCC for taking "a perfectly legible statute and turn[ing] it on its head." In a friend of the court brief, these Republicans and Democrats contend that the FCC's price-setting rules would not only "frustrate the development of genuinely competitive local telephone markets," but also "reduce investment in local telecommunications networks" we all depend on.

States should ignore the FCC's anti-competitive pricing formula, and instead work to devise formulas that will permit competition, while ensuring that vital network maintenance and expansion are

adequately funded.

Universal Service

For most of this century, universal service has been a primary goal of our national telecommunications policy. Very simply, universal service means making telephone service available at an affordable price to anyone who wants it. This principle has been so successful that today, nearly every American household has a telephone and the average monthly rate is just $19, as compared to the average monthly cost of between $30 and $32 per month for long distance services.

How universal service will be maintained in a competitive environment is a question of urgent importance. Congress said the goals of competition must be balanced with the need to preserve, and to increase, universal service. The USTA could not agree more.

Under the current universal service system, local phone companies are required to provide high quality service at reasonable rates in their specified geographic areas. In order to meet this obligation, local companies must invest in all their service areas, including those which are economically unattractive because they are more expensive to serve.

Unfortunately in this new competitive environment, the FCC did not balance the transition to competition with the need to preserve universal service. Instead, the FCC misguidedly wants to allow new entrants to use the local phone network at a price substantially below cost. And long distance companies have already indicated that they are going to pursue high-end, lucrative customers and avoid those who are expensive to serve.

If local phone companies are left with only the expensive to serve, these companies will not receive sufficient revenues to cover the costs of maintaining universally available service. Universal service will not be achieved. The FCC must take a hard look at the competitive activities of new entrants and their effect on the ability of local phone companies to provide universal service.

Access Fees

A few cents of each long-distance call goes to the local telephone companies that provide the origination and termination facilities for the call. These charges, called access fees, are used to support universal service and the maintenance of the local telecommunications system.

The FCC is considering reforming access fees as part of its revision of rules following passage of the Telecommunications Act of 1996. The USTA believes access fees are necessary for local phone companies to provide affordable universal service and maintain the local networks. It also believes responsible access charge reform can be accomplished.

Access fees must be reformed in a manner that does not put these fundamental and critical needs at risk. Access charges also must be continued to assure that local service companies are fairly compensated for the origination and completion of long distance calls.

In the past, when local companies have reduced these access fees, long-distance companies have not passed the savings on to consumers but have simply pocketed the money. Therefore, there is no reason to believe that permanently reducing or eliminating these fees would have any favorable result for consumers.

The FCC needs to closely consider the impact of access fee reform on consumers and local phone

companies.

To ensure that America's telephone service continues to be the best in the world requires that all who use the telecommunications network to make a profit pay their fair share to maintain it:

Reasonable interconnection rules. New entrants should not get a free ride on the telecommunications network. They must pay interconnect costs that reflect the amount of money needed to build and operate the network.

Continued universal service distributions. Local telephone companies serving high-cost regions must be fairly compensated for meeting their universal service obligations.

Fair and equitable access fees. All users must pay a fair and reasonable access fee for calls that originate or terminate on a local telephone company's network.

Basic Facts: The Telecommunications Act of 1996

February 8, 1996 ushered in a new era of telecommunications when President Clinton signed into law the Telecommunications Act of 1996. After four years of debate, Congress drafted legislation that overhauled outdated regulations left largely untouched for more than 60 years. The new law promised increased competition, more consumer choices, lower prices, technological advancement and increased U.S. competitiveness. The question is whether the Federal Communications Commission and state regulatory commissions will design regulations that fulfill the promise of the new law.

The New Telecommunications Industry: The Act has broad ranging implications for all areas of telecommunications. It allows telecommunications and cable companies to expand into new markets -- geographic as well as new products and services -- where they were previously barred or restricted. It empowers the states with new regulatory authority to enact rules to ensure fair competition and widespread access to new technologies and helps companies agree on how they will serve consumers in new markets.

Competition in Local Markets: No state may prohibit any entity from providing telecommunications services, but states can manage public rights-of-way in a competitively neutral manner and require fair and reasonable compensation from competitive providers for their use of the right-of-ways.

Competition in Long Distance: The Bell Operating Companies must complete a "competitive checklist" in order to qualify for providing long-distance service within their regions. The law also requires all local exchange carriers (LECs) to interconnect with new entrants, "unbundle" their networks and allow "resale" by competitors, provide "number portability" so customers can keep their phone numbers when switching local providers, and other steps to promote an effectively competitive local exchange market.

Interconnection: Long distance and cable companies wishing to enter the local phone market use -- or interconnect with --the local phone network in order to provide local phone service. The USTA believes the price at which interconnection occurs for new entrants must cover the costs of providing local phone service and maintaining and growing the local telephone network.

Universal Service: Universal Service is an "evolving" level of telecommunications services that the FCC determines are essential, have been subscribed to by a majority of customers, are being deployed

in public networks by carriers and are consistent with the public interest, convenience and necessity. States may add to the definition, provided that the States also adopt specific, predictable and sufficient mechanisms of support.

Schools and Libraries: Elementary and secondary schools and libraries shall have access to telecommunications services at rates that are both less than any amount charged for similar services to other parties and that are determined by the FCC and the states to be affordable.

Telecommunications Equipment Manufacturing: The Act allows the local phone companies to manufacture telephone equipment once the FCC approves their application for out-of-region long-distance.

For those with Internet access, a further description of the provisions of the Act can be found on the USTA web page (www.usta.org).

Basic Questions & Answers: Telecommunications Deregulation

Why is there so much controversy about telephone competition? Isn't competition good for consumers?

Yes, competition is good for consumers and America's local telephone companies are ready and eager to compete. No one has a finer record of reliability and customer service to bring to the marketplace. But policy makers need to remember that telephone service is not only a business, but also a vital public service, such as linking consumers to a fire department. For decades, Americans have enjoyed extremely reliable and affordable telephone service -- the best in the world. Now that Congress has passed the Telecommunications Act of 1996, which mandates competition in all areas of telecommunications, the transition must be properly managed so telephone service remains reliable, affordable and available to everyone.

What makes local telephone service so valuable?

Unlike most other goods and services, the value of your telephone is directly related to how many other telephones are connected to the network. That's why the public telecommunications network that provides a dial tone and lets us connect almost instantly with any other number on earth is so important. Telephones would be worthless without the network. Opening local telephone service to competition must not damage the network's ability to handle calls.

Is it true that businesses subsidize telephone service?

Yes, policy makers decided long ago that it is appropriate for businesses to subsidize local residential phone service. In addition, long distance rates and optional features, such as custom calling, are priced higher than cost so a portion of the profit can subsidize local residential service rates. Also, long-distance companies, cellular companies, and others whose businesses rely on the local telecommunications network pay fees that help support network maintenance and expansion.

Who operates the network? The government?

No, the local telecommunications networks that originate and terminate our calls are owned and operated by local telephone companies. They own the cables in our cities and towns and the highly-complex, computer switches that route calls and provide the optional service add-ons, such as

Call Waiting and Caller ID. A number of competitive access providers (CAPs) also have facilities serving large business customers with local network connections primarily on long distance calls.

What are some of the benefits of competition?

The main benefit for consumers is that they will be able to choose services from a variety of companies at the price that best suits their needs. Of course, new entrants will be targeting the most attractive, high-profit customers -- businesses and affluent residential users who make lots of long distance calls and use enhanced-calling services. Less attractive areas or customers who make fewer long-distance calls are not likely to have as many choices -- just as some small town residential areas today have fewer upscale supermarkets, restaurants and shopping malls.

Will there be competition everywhere or just in some markets? AT&T Chairman Robert Allen described his company's strategy this way: "It's logical that bees follow honey and banks are robbed because that's where the money is. ... Our focus will be on concentrated markets in major cities with concentrations of business customers."

Will competition bring more networks? Good question. You might think that new competitors would come into local communities and build new networks to carry their calls. But in fact, it's more likely that they will use the existing local telephone networks -- buying service from the local telephone company and reselling it to their customers. British Telecom's CEO, who recently announced his intent to acquire MCI, told a New York Times reporter, "British Telecom's priority is to become a ubiquitous European long distance carrier, not to spend its money wiring America."

If the new entrants are re-selling the local phone company's network, how can they make a profit?

The local telephone companies will be required to sell network access to the new entrants at a discount. In fact, under a pricing order issued by the Federal Communications Commission, the big long-distance companies would have been able to buy access to the local telephone network at prices much lower than the actual cost of operating the network. Fortunately, the FCC's order was blocked by a federal appeals court and the U.S. Supreme Court declined to review the case.

If the local telephone companies are forced to sell their services to re-sellers for less than cost, how will they be able to maintain the network?

If the local companies not only lose customers to the resellers, but also are forced to sell access to their network at a loss, they will find it difficult or impossible to finance the network expansion that is needed to provide service to new customers. And as revenues decline, they will find it increasingly demanding to maintain the network as well as they have in the past in order to provide universal service. The local phone companies invest $20 billion a year to keep this network reliable for consumers. In addition to repairing storm damage to lines and normal wear-and-tear, it is necessary to continue upgrading the switching apparatus, running new lines into new neighborhoods, and adding lines in existing neighborhoods to accommodate modems and fax machines. Companies cannot build the facilities to serve new customers if they are unable to finance those facilities. What is rate balancing? How does it fit into this? For decades, regulators have mandated telephone companies to balance their prices in a manner that keeps basic local telephone service at below cost rates, so that everyone would be able to afford a telephone. Today, the average residential telephone rate nationwide is $19, far less than the cost of providing service in many areas. It actually costs the telephone company much more to install and maintain the lines in remote areas than those in urban

areas. Other high-cost areas include so-called edge cities -- those distant suburbs that are growing so rapidly it is hard to build enough telephone circuits to serve them all. Rate rebalancing is the trend to slowly remove subsidies in the telephone industry. When subsidies are removed, residential customers would pay more of the true cost of providing their basic local phone service, and the inflated rates for business, toll rates, and prices for enhanced-calling features would drop to reflect their true costs.

What happens to rate balancing in a competitive environment?

It depends. If new entrants are allowed to siphon off the big-spending customers in the cities and established suburbs, the local phone companies will have trouble continuing to serve the high-cost areas at the old low rates. It's possible then that, while competition initially lowers prices for some customers, it may result in major increases for others. In the long term, unless new entrants are required to pay a fair rate for reselling local telephone service, the network may well be unable to maintain the high standards of reliability and service Americans have come to expect, without major rate increases or some other source of revenue.

Do long-distance companies help support the local network?

They pay an access fee for long-distance calls that originate and terminate on a local company's lines. This payment helps local telephone companies provide affordable service to consumers no matter where they live and also helps maintain and expand the local network.

Will long-distance companies continue to pay access fees?

The FCC is expected to modify or even eliminate access fees. While some reform may be necessary, there must be a mechanism to finance service in high-cost areas and network maintenance or rates must be rebalanced to cover costs (suggested new language). In the past, the long-distance companies have claimed the access fees are a burden on consumers because they pass them on in their rates. But when local telephone companies reduced the access fee by more than $9 billion, the long-distance companies did not pass the savings on to consumers. They simply kept it.

How will the concept of Universal Service be handled in the new environment?

Universal Service has always been a primary goal of American telecommunications. It involves a series of transfer payments among companies and services that help support local telephone service in most regions of the country. The Telecommunications Act provides for expanding the Universal Service concept to include special rates for schools, libraries and health care providers. The FCC is still drafting the rules under which Universal Service will operate in the future.

Fact Sheet: America's Local Telecommunications Network

When someone mentions telecommunications, most of us think of "the phone company," but there is much more to it than that. Our telephones, cellular phones, fax machines and computer modems are all interconnected by an almost unimaginably vast and complex web of networks owned and operated by the nation's local and long distance telephone companies.

What It Is: The U.S. telecommunications system is the world's largest distributed network, enabling point-to-point voice, fax, data and video-conferencing services to hundreds of millions of subscribers worldwide. It is ubiquitous, highly inter-operable and extremely reliable, and is capable of handling millions of simultaneous calls with precise tracking and billing. Vital statistics of America's

telecommunications network:

· 150 million local lines connecting customers to the network · 1,200 local telephone companies · Annual investment to upgrade and expand network: $20 billion by local telcos · Reliability rating: 99.9999%

Interconnection: One of the wonders of the American system is the ease with which customers are handed off from one network to another. Any subscriber to any of the 1,200 local telephone companies can call any other subscriber on any other local telephone company. This process is called interconnection.

· If the call is being made to a nearby town, the interconnection may involve only the two local companies. If it is being made across the country, the process involves two local companies and a long-distance company that carries the call over its lines from one local network to the other.

Competition: Beginning in the 1930s, the government restricted competition in local telephone service, which had been hotly competitive in the early years of the 20th century. · Bell Operating Companies were created in 1984 as a result of AT&T's divestiture of its local phone company holdings.

· In the Telecommunications Act of 1996, Congress opened local and long-distance telephone markets and cable television to competition, hoping to bring consumers lower prices and an array of new services while stimulating the economy through billions of dollars of new investment by telecommunications companies rushing to enter new markets. Once again, the issue is interconnection. No new entrants should be allowed to interconnect with the local network for less than it costs to provide the service. In implementing the new law, the Federal Communications Commission adopted a pricing plan that would allow the long-distance companies to use the local telephone networks for less than cost. A federal appeals court blocked the FCC's order, however, some states have adopted the FCC's pricing formula.

Key Facts

Competition

The number of privately negotiated interconnection agreements show progress at state-level in local phone competition:

· 250 Interconnection Agreements signed since passage of the Telecommunications Act in February 1996 (as of October 31, 1996).

· 35 agreements signed since the 8th Circuit Court issued on September 27th its stay of the FCC's Interconnection order. Some examples:

· October 24 -- Bell Atlantic announces two new agreements in Pennsylvania with local competitors.

· October 21 -- BellSouth announces a new agreement with a competitor covering nine states.

· October 15 -- NYNEX announces a new agreement.

· October 15 -- GTE announces interim agreement in Washington state with a local competitor.

· October 28 -- Pacific Bell signs three-year interconnection agreement.

· October 29 -- Three states issue arbitration recommendations for Ameritech in Ohio, BellSouth in Florida, and US WEST in Arizona.

· 178 interconnection agreements currently in arbitration process.

Deep Discounts Sought by Long-Distance Companies

· FCC interconnection order would require local phone companies to lease their phone lines to the long-distance companies at a deep discount rate -- 17-25% off.

· But long-distance companies have requested outrageous discounts, some even as high as 56 percent.

Key Network Facts

· Network Investment: In 1995, local companies invested $20 billion per year.

Number of Phone Lines (FY 1995):

· Total LECs Access Lines: 162.6 million

· Total LECs Business Lines: 56 million

· Total LECs Residential Lines: 107 million

Consumer Demographics

U.S. Households: When the 1934 Communications Act was enacted, 40% of American households had local phone service. In 1994, 93% had phone service.

· Low-income households in the U.S. are less likely to have telephone service: 73% with incomes under $5,000 have phone service compared to 99.1% with household incomes over $60,000.

· Unemployed Americans are less likely to have telephone service in their homes: 89.2% of unemployed Americans have phone service compared to 95.7% of employed Americans.

· Phone service (both long-distance and local) accounts for 2% of U.S. household expenditures. In 1993, the average household spent $638 on phone service.

· Each average business day, American companies use the local phone network a total of 11.6 billion minutes.

· Average national residential monthly phone rates in 1995: $19. Consumer Demographics (cont.)

· Since 1984, when AT&T split-up, local phone rates have decreased: 16.5% since 1984, 2% in 1994 alone.

· U.S. business spending on phone service: In 1994, monthly average of $43.81.

Key Local Phone Company Facts

Local Phone Company Annual Revenue (FY 1995):

Quick Signal ...

·Local Phone Service: $49 billion

·Network Access: $33 billion

·Long-Distance/Toll: $11 billion

·Miscellaneous: $11 billion

·Total: $104 billion

·Number of Employees (1995) 500,000

Long Distance

·U.S. Household Monthly Phone Bill: In 1995, monthly average of $30 - $32.

Interconnection: Establishing Fair Rules for Competition

Creating competition in local telephone service takes more than an act of Congress. The new competitors must have a way to connect to potential customers. They must either build their own network of wires and call-routing computers, or hook up to the local telephone company's existing network, a process called interconnection.

The United States Telephone Association (USTA) maintains that all new entrants wishing to use or interconnect with the local telephone network must pay their fair share of the maintenance and development of the network. This means that new entrants must buy services from the local phone companies at a level that meets the cost of providing those services.

For the last 100 years, states have had jurisdiction over phone service within their boundaries and Congress took the correct position in its legislation when it left state utility commissions as final arbiters of interconnection agreements. State utility commissions will fashion solutions that fit local economic, social, and geographic conditions rather than relying on a one-size-fits-all decree from Washington, D.C.

States are now mandating the price at which local phone companies allow new entrants to interconnect with the local network -- and that price should cover the cost of providing the service.

Unfortunately however, the Federal Communications Commission (FCC) is attempting to overrule the states' jurisdiction on pricing by issuing a massive set of rules to establish a single, nationwide base price for interconnection. The price is so low that it would force local companies to sell service to their competitors for far less than actual cost. This is completely unacceptable.

Under the FCC plan, a big long-distance company or other new competitor could come into a state and offer deep discounts to high-density business customers and residential customers who are big consumers of long-distance. This kind of action quickly strips off the high-profit customers and leaves consumers elsewhere in the state to pick up the tab. It also removes the local companies' ability to continue upgrading the network to meet demands for new and expanded services.

States should ignore the FCC's anti-competitive pricing formula, and instead work to devise formulas that will permit competition, while ensuring that vital network maintenance and expansion are adequately funded.

Universal Service: Providing Low-Cost Basic Telephone Service For All

The principle of universal service, which has been an implicit part of America's telecommunications policy since the 1930s, provides affordable basic telephone service to all Americans regardless of where they live. This policy was made explicit in the Telecommunications Act of 1996 by requiring that the goals of competition be balanced with the need to preserve, and to increase, universal service. The United States Telephone Association (USTA) could not agree more.

The USTA has recommended that the 1996 universal service standard be a voice-grade, single-party line with touch-tone and 911 service. It should also include access to operator service, directory assistance, a directory listing, and long distance services. As consumer needs change over time, the USTA's definition will evolve accordingly.

The Telecom Act provides for the Universal Service Fund to continue to be financed by all providers of interstate telecommunications and tasks the Federal Communications Commission (FCC) with determining the exact formula.

Under the current universal service system, local phone companies are required to provide high quality service at reasonable rates in their specified geographic areas. In order to meet this obligation, local companies must invest in all their service areas, including those which are economically unattractive because they are more expensive to serve. Subsidies help keep local rates low. Generally, business and urban users subsidize residential and rural users, and long distance and value-added services (like call waiting) subsidize local service. Currently, the system is set up to provide subsidies of $20 billion a year to promote and maintain universal service at reasonable rates.

Unfortunately in this new competitive environment, the FCC did not balance the transition to competition with the need to preserve universal service, as Congress had intended. Instead, the FCC misguidedly wants to allow new entrants to use the local phone network at a price substantially below cost. Long distance companies have already indicated that they are going to pursue high-end, lucrative customers and avoid those who are expensive to serve.

If local phone companies are left with only high cost users, these companies will not receive sufficient revenues to cover the costs to provide them with service. America could soon be divided into two sections -- one with affordable and highly-advanced telecommunications and information services and another with expensive, unreliable and outmoded telephone services. This situation cannot be allowed to stand. The FCC must recognize the importance of predictable, consistent funding that can be relied on by customers to ensure the availability of affordable universal service throughout the nation.

Access Fees: Ensuring Continued Investment in the Network

Consumers may be surprised to learn that the monthly fee paid for residential telephone service -- $19 average, nationwide -- does not come close to covering the full cost of providing that service. The true cost is usually at least twice the monthly rate the consumer pays, and in some cases it is even higher.

Helping to make up this difference are a variety of inflated funding processes, including fees paid by long-distance companies, usually called access fees, for using the local telephone network to originate and terminate long-distance calls. Each time a long-distance call is placed, the long-distance carrier pays a few cents to the local telephone company to cover the cost of that transporting that call as well

as continued maintenance of the local network. This support for local phone service is vital. It demonstrates that those who use the network pay for it and contribute their fair share of the cost of maintaining and expanding the network.

In fact, most of the proceeds from access fees go toward subsidizing local phone service -- a principle called universal service that keeps local phone service affordable for all consumers, no matter where they live. The remaining funds help maintain the reliability of the local telephone network.

The Federal Communications Commission (FCC) is considering reforming access fees as part of its revision of rules following passage of the Telecommunications Act of 1996. The United States Telephone Association (USTA) believes access fees are necessary for local phone companies to provide affordable universal service and maintain the local networks. It also believes responsible access charge reform can be accomplished.

The long-distance companies claim that the access fees are an unnecessary burden on consumers because they pass them on in their long distance rates. But when local telephone companies reduced access fees for long distance calls by $9 billion, the long-distance companies simply pocketed the money and never passed the savings along to consumers.

Telephone service in America is so reliable that consumers take it for granted. Few realize the expense of maintaining and expanding the complex network. Wiring new neighborhoods is a tremendous expense; it can take 40 years for a local telephone company to recover the cost of installing service to one new home.

The FCC must carefully consider the ramifications of reforming access fees so universal service and the valuable local telephone network are efficiently maintained.

Key Telecommunications Terms

Access fees -- The charges long-distance companies pay for using local telephone networks to originate and complete calls. The fees help keep residential service affordable.

Access lines -- Local telephone lines connecting residential and business subscribers to the local and long distance telephone network.

AT&T divestiture -- The court-ordered break-up of AT&T resulted in the creation of the regional Bell Operating Companies (RBOCs) in 1984. AT&T retained its long-distance and equipment divisions, while the RBOCs took on the responsibility of providing local phone service.

Bypass -- The process by which a large customer connects directly to a long-distance network, thus avoiding the local telephone network. Bypass allows the customer to avoid paying many of the local, state and federal taxes on local telephone lines and also eliminates the access fee.

Common carrier -- An entity licensed by the Federal Communications Commission or a state public safety commission to supply communications services at established prices. Common carriers cannot discriminate among users and must provide service to all who request it.

Cream skimming -- The process by which a company pursues only the most profitable customers. In telecommunications, cream skimmers target corporate and institutional customers who are heavy users of local and long-distance services.

Facility-based service provider -- A provider that builds and maintains its own network. All local telephone companies are facility-based; most new local competitors are not. (See resellers)

Federal Communications Commission (FCC) -- A federal agency created by Congress in 1934 to regulate interstate and international communications by telephone and other means. Local and intrastate telephone services are regulated by state public utility commissions. Flat rate A method of pricing telephone calls so that customers pay the same rate per month regardless of how many calls they make. It is the most common pricing plan for residential telephone service.

Interconnection -- The process of linking one network to another so that telephone calls or data can be transferred. Without interconnection, telephone users would only be able to talk to other subscribers of their local telephone company. The term is also applied to wholesale arrangements between resellers and local telephone companies. (See resellers) Interexchange carrier (IXC) A long-distance company such as AT&T, MCI or Sprint. Generally speaking, IXCs carry traffic from one LATA to another.

Joint board -- A body created by the Telecommunications Act of 1996 to investigate universal-service issues. It consists of three FCC commissioners, four state public utility commissioners and a consumer representative. On November 7, 1996, the Joint Board made its recommendations to the FCC.

Lifeline -- A federal program that waives the monthly subscriber line charge for low-income subscribers. Most states have matching programs.

Local access and transport area (LATA) -- A region that constitutes the local and long distance service area for Bell operating companies. The Bell companies are only authorized to carry calls within a LATA. GTE and other local telephone companies are authorized to provide both local and long distance services with no LATA boundaries. (Bell companies provide intraLATA long distance services. And as a result of the new legislation, are authorized to provide interLATA long distance to cellular customers. Bell companies also are allowed to provide interLATA long distance service outside of their wireline local service areas.)

Local exchange carrier (LEC) -- The local telephone company with an obligation to provide local service to all customers within a specific exchange territory. (Generally, there are multiple local service companies within a LATA.)

Local loop -- The line that connects the telephone company's central office to a telephone or other device. The loop provides two-way communications. By contrast, a cable television system's local loop is usually designed for one-way communications.

Measured service -- Also known as toll service, it is a method of charging subscribers based on the time, duration or distance of a call. Also called measured telecommunications service (MTS).

Modified Final Judgment (MFJ) -- The ruling by Judge Harold Greene in 1982 that settled an antitrust suit against AT&T. It resulted in AT&T's breakup in January 1984.

Monopoly -- Economist John Stuart Mill in 1848 established the principle that there are instances in which a single provider can produce a service or product more cheaply than if there were multiple producers. For most of this century, utilities (including telephone companies) have been considered monopolies because of the extremely high fixed investment they require.

Network -- A system for connecting various devices. A network of roads connects different cities and towns. The telecommunications network connects telephones, fax machines, modems and other devices. Just as cars would be useless without roads, so telephones would be useless without the network. Oligopoly A situation in which a few large players dominate a market and have effective control of pricing. Commonly said to apply to the long-distance market, where AT&T, MCI and Sprint control about 90 percent of the revenue.

Public utility commission (PUC) -- The state entity that regulates local telephone service and other utilities. Sometimes called public service commission, department of public services or corporation commission. Publicly switched telephone network The privately-owned U.S. telephone network. It is nationwide, interconnected and available to all telephone subscribers.

Redlining -- In telecommunications, redlining refers to competitors pursuing profitable customers while declining to provide service in low-profit areas. (See cream skimming)

Reseller -- A business that buys network capacity at wholesale prices from a facility-based provider and then resells it to the public at a profit. New competitors want guaranteed low wholesale prices. The local telephone companies want to recover a fair share of the actual cost of maintaining and operating the network. (See interconnection)

Switches -- The machines and computers that switch traffic on the telephone network. Modern switches are digital computers; older switches are mechanical devices.

Universal service -- The policy that seeks to provide easy, affordable access to basic telephone service to all who want it. The definition of basic service has evolved as technology has advanced.

Universal Service Fund -- A federal program that helps subsidize local telephone service in high-cost regions of the country. It is financed by interstate carriers and administrated by the National Exchange Carrier Association (NECA).

Source: Telewars in the States, Thomas W. Bonnett, 1996

Quotes from Members of Congress, Courts and Local Phone Companies

These are selected quotes from Members of Congress, the Courts and local phone companies about the new competitive telecommunications marketplace.

Members of Congress

The following quotes came from the November 18, 1996 amicus brief filed by four Members of Congress: Representatives John Dingell (D-MI), Bill Tauzin (R-LA), Rick Boucher (D-VA) and Dennis Hastert (R-IL).

"The Commission [FCC] has taken a perfectly legible statute [Telecommunications Act of 1996] and turned it on its head." "The FCC's First Report and Order on interconnection is an act of extraordinary arrogance." "The Commission is behaving like a renegade agency. It appears to believe that it isn't accountable to anyone, and should be free to substitute its own judgments for congressional directives."

"The Order blatantly disregards congressional intent in two material respects: it asserts federal jurisdiction in areas that Congress intended to reserve for state control, and it establishes rules for the

unbundling of network elements that are contrary to congressional intent, and that threaten the viability of established telecommunications networks."

"In order to reach the conclusions found in the Order, the Commissioners either had to determine that they had the authority to ignore the plain intent of the peoples' elected representatives, or that Congress doesn't know enough about legislative drafting to explicitly amend sections of the law that it wanted to change." "The Commission has arrogantly imposed, through the Order, its own view of what Congress should have done through the Act."

"The Commission's rules have the perverse effect of allowing a competitor to choose the more favorable cost-based pricing method, effectively gutting the statutory distinction and guaranteeing that non-facilities-based carriers can make money by undercutting the incumbent's price for any offering that the incumbent must -- under state regulatory policies -- price above cost.

"The Commission adopts quick fixes that Congress rejected in favor of encouraging long-term investment and employment."

"Under the FCC's approach, however, a company like AT&T can obtain all the unbundled network elements it needs to sell local service with its long distance service, without having a single foot of local telephone wire of its own."

"New competitors, who could obtain access to the incumbent's facilities below actual cost, would not build any of their own. And incumbents, lacking any incentive to incur additional construction costs that could not be recovered, would neglect their networks."

"Congress wanted to encourage construction of competitive networks, not to set up a system whereby new entrants live indefinitely off of the incumbent's investment."

"The Commission's foray into areas Congress reserved to the states is doubly improper because it establishes rules for the unbundling of network elements that would hamper full competition and reduce investment in local telecommunications networks."

"The FCC's rules would eliminate virtually all of the flexibility that Congress gave the state commissions. Worse than that, however, they would frustrate the development of genuinely competitive local telecommunications markets."

"We think the Commission is wrong about sound policy, as well as about the law. Its approach will reduce employment and economic growth."

"Recent statements by the Eighth Circuit Court of Appeals make it clear that the FCC is having some difficulty following the law. This is not a proud legacy for its Commissioners, and certainly not for its chairman." "I am also deeply disturbed by some of your recent statements claiming that distinctions between interstate and intrastate services are things of the 'past.' Surely, the Telecommunications Act of 1996, which specifically preserves that distinction, is not a thing of the past. Surely, the law of the land is not a thing of the past, nor something that an agency can merely reinvent." **-- Letter to FCC Chairman Reed Hundt by Rep. Jack Fields (R-TX), October 17, 1996**

"If Hundt is willfully disregarding the intent of Congress, he should resign and the President should appoint someone who can read." "If Hundt does not follow congressional intent, his life at the FCC will be miserable." **-- Rep. Jack Fields (R-TX), Comments at National Association of Regulatory Utility Commissioners (NARUC), November 19, 1996**

The Courts

"We acknowledge that portions of the Telecommunications Act of 1996 expressly grant the FCC authority over some aspects of intrastate telephone service. We have been unable, however, to find such an express grant of authority to the FCC over the pricing of intrastate telephone service..."

"The FCC's pricing rules will derail current efforts to negotiate and arbitrate agreements under the Act, and the 'pick and choose' rule will operate to further undercut any agreements that are actually negotiated or arbitrated." "We believe that the petitioners have adequately demonstrated that they will be irreparably harmed if a stay of the FCC's pricing rules is not granted." **- - United States Court of Appeals for the Eighth Circuit, Stay on Pricing Rules in FCC interconnection order, October 15, 1996**

Local Phone Companies

"You no longer have poor old MCI trying to get into the local business. You've now got a huge foreign monopoly trying to crack local markets here with a huge hoard of cash. There's no longer a reason for MCI to get 60 [to] 70 percent effective discounts for rights to connect to the network." "The new entrants can pick and choose the markets where they are going to fly their own airplanes. That's basically what we've been told. We have to wholesale service below cost and be the provider of last resort at a loss and competitors can pick and choose where they serve. It's as simple as that." **- John Schneidawind, Spokesman for BellSouth Corporation, The Washington Post, November 5, 1996**

"Take the issue of reselling services...that is like requiring Delta Air Lines, which flies virtually everywhere, to sell seats on its plane at wholesale price to competitors, who can then resell the seats at a profit to passengers. The competitors thus avoid having to build their own airplanes or develop routes to distant locations." **-- Mark Stromberg, retired Utah Vice-President for U S WEST, Deseret News, October 29, 1996**

"This is a three-legged stool and the Commission has given us one questionable leg to stand on while it fixes the other two -- Universal Service and Access Reform. We will be fighting to make sure the FCC stabilizes this tool appropriately as it takes on the next two legs of this critical process for large, mid-size and small telephone companies." **- - Roy Neel, President and CEO of United States Telephone Association, August 1, 1996**

Quotes from Long-Distance Companies

What They Have to Say About Competition

Long distance carriers have been quite vocal about their business plans in the newly-competitive telecommunications marketplace. These are a few examples of how they see competition shaping up in local markets.

"It's logical that bees follow honey and banks are robbed because that's where the money is, and our focus will be on concentrated markets in major cities with concentrations of business customers." **-- Robert Allen, AT&T Chairman, Newsday, February 9, 1996**

"You go where the money is and work your way down the money chain from there. You would recoup your investment really quickly." **- - David Arneke, AT&T Spokesman, Triangle Business**

Journal-Raleigh, NC, June 21, 1996

"For the rest of the country, we want to use other people's assets and capital everywhere we can." -- **Harry S. Bennett, AT&T Vice President of Local Services Division, Business Week, July 8, 1996**

"We will certainly go after those parts of the market that we consider most profitable. It will be business. It will be certain areas of the residential community." - - **Bert Roberts, MCI Chief Executive Officer, Moneyline, (talk show) August 1, 1996**

"There's nobody in the world who doesn't believe that MCI, with its marketing and sales strength, can't pick off 15% of any market. We could pick off that much of the shoe market, and we don't even make shoes." -- **Bert Roberts, Jr., Chairman and CEO of MCI, The Washington Post, March 28, 1996**

"Ten years ago, we killed off their ma. Now, let's finish off her seven little bastards." - - **Timothy Price referring to AT&T and the regional Bell companies, President of MCI Long Distance Division, Business Week, September 25, 1995**

"The RBOC's (regional Bell operating companies) ability to compete in long distance and their experience in competition is 'zilch'." -- **Robert Allen, Chairman and CEO of AT&T, Merrill Lynch Analysts Conference, March 22, 1995**

"It is going to be years before BellSouth will even come close [to what MCI offers]." - - **Brian Brewer, MCI Senior Vice President, Atlanta Constitution, June 27, 1996**

"Baltimore is a very big deal for AT&T...We can't win in Maryland without winning in Baltimore." -- **Jack McMaster, AT&T Lead Executive for Atlantic States Region, Warfield's Business Record, July 1, 1996**

"There is a lot that we can bring to the table in terms of helping accelerate MCI into the local loop such as how to leverage other people's infrastructure that has been resold [and] how to look at the approach of business versus residential." Mockett added that British Telecom's long-term plans don't include penetration much below the "top 30 percent" of residential customers at all. -- **Alfred Mockett, President of International Division of Concert, The Washington Post, November 10, 1996**

Telecommunications Reform: A Timeline

1934 Communications Act of 1934 creates Federal Communications Commission removing regulatory responsibility of interstate communications from the Interstate Commerce Commission.

1949 The Justice Department files an antitrust suit against AT&T, alleging that AT&T and Western Electric tried to monopolize the telephone equipment market.

1956 AT&T signs a consent decree limiting it to the provision of regulated telephone service and Western Electric to the provision of telephone equipment.

1971 Specialized Common Carrier decision opens up business telecommunications market to competition.

1974 U.S. government files antitrust suit against AT&T, alleging that AT&T monopolized interstate communications services, and seeking the divestiture of Western Electric and Long Lines.

1982 AT&T and the Department of Justice settle antitrust case and AT&T agrees to divestiture.

1984 AT&T divests itself of the local phone company holdings creating the Regional Bell Operating Companies. AT&T retains its interexchange carrier (IXC) status, network and rights to manufacture equipment.

1996

February

1 Telecommunications Act passes both Houses of Congress.

8 President Clinton signs Act into law.

August

8 FCC adopts interconnection rules - the first major rulemaking implementing the Telecom Act.

28 GTE Service Corporation and the Southern New England Telephone Company (SNET) file motion at FCC to halt implementation of FCC interconnection order, arguing the order oversteps FCC jurisdiction intended by the 1996 Act. According to GTE and SNET, the Act meant for pricing standards to be resolved by marketplace negotiations not the FCC.

October

15 U.S. Court of Appeals for the Eighth Circuit in St. Louis stays pricing provisions in FCC interconnection order -- based on their opinion that the FCC did not give states enough leeway to set local phone rates.

November

7 Federal-State Joint Board issues its recommendation to FCC on universal service.

12 Supreme Court upholds U.S. Court of Appeals for the Eighth Circuit in St. Louis stay on pricing rules in FCC interconnection order.

18 Deadline for filing opening briefs for parties in favor of U.S. Court of Appeals for the Eighth Circuit in St. Louis, stay of FCC's interconnection order. USTA filing contends FCC has infringed upon jurisdiction Congress intended for the states.

December

16 Deadline for universal service comments.

23 Briefs are due for parties challenging the U.S. Court of Appeals for the Eighth Circuit in St. Louis stay of the FCC's interconnection order.

24 FCC issues Notice of Public Rulemaking on access charge reform.

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January

17 Targeted deadline for comments to FCC on access reform. U.S. Court of Appeals Eighth District in St. Louis begins hearing oral arguments.

February

Targeted deadline for replies on access reform.

March

Targeted deadline for Ex Partes on access reform.

May

8 Target date for FCC release of final universal service plan. Target date for FCC release of final access charge plan.

Source: Telewars in the States, Thomas W. Bonnett, 1996, p. 54.

About USTA: America's Association of Local Phone Companies

Now in its 100th year, the United States Telephone Association (USTA) is the nation's only forum for the small, mid-size and large companies of the local exchange carrier (LEC) industry. USTA's more than 1,000 member companies nationwide represent more than 95 percent of the nation's local access lines. From ALLTEL Alabama, Inc. in Leeds, Alabama to Zumbrota Telephone Company in Clara City, Minnesota, our members have total revenues from domestic telecommunications operations of approximately $100 billion.

USTA's mission is simple: to promote the general welfare of the telephone industry, to collect and disseminate industry information and to provide a forum for the discussion and resolution of issues of mutual concern.

Since its founding, USTA member companies have witnessed tremendous change in telecommunications technology and regulation. With the introduction of competition into the local loop and emerging technologies that build and maintain the international information infrastructure, the telephone industry faces challenges and opportunities virtually unimaginable just a decade ago.

A $20 Billion Per Year Investment

Unlike highways, bridges, airports or other elements of our national infrastructure, the supremely reliable, universally available American telecommunications network has been built with capital provided by stockholders, not with government bonds or subsidies. And the investment continues. USTA member companies spend more than $20 billion each year to expand and upgrade the network so that it is ready to provide service whenever and wherever it is needed. That expense must be met in the future if the network is to keep up with maintenance, and demands for new and expanded services.

Member Company Categories

USTA member companies fall into three categories: small, mid-sized and large.

Small companies

Small companies are those with access lines of 50,000 or less. Across America, some 1,000 localcompanies fit this definition, three-quarters of which are USTA members. And between 60 to 70 percent of these have under 5,000 access lines. For more than 100 years, vast, rural parts of the United States have been served by independent local telephone companies. In rural America, small companies are often the only link to the big cities and the rest of the country. One of the smallest of the independent companies serves 32 customers in Wawina, Minnesota.

Mid-size companies

Mid-size companies are those with 50,000 to 2 million access lines. The 26 USTA mid-size members serve more than 10 million customers in both rural and urban areas. Despite their size, these companies are deploying new fiber optic and digital technologies and are providing facilities for educational and health care services. A majority also offer cable television, long-distance, cellular, paging, other wireless services and internet access.

Large companies

USTA's eight large companies serve customers in every state. From Pacific Telesis in San Francisco to NYNEX in New York City, these companies are distinctly different in size and geographic territory served. Serving more than 75 percent of America's urban and rural population, the Regional Bell Operating Companies are BellSouth, Bell Atlantic, NYNEX, SBC, Pacific Telesis, Ameritech, U S WEST and the nation's largest independent telco, GTE.

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April 2,	1872	Western Electric founded to sell telegraph equipment and pursue experiments on electric telephone formed by merger of Western Union with Electrical Appliance Manufacturers.
February 27,	1875	Bell Patent Association Agreement formed.
June 2,	1875	Initial discovery of telephone principles by Alexander Graham Bell and Thomas Watson.
October,	1876	First sustained telephone conversation by Bell's father-in-law and backer, Gardiner Hubbard
February 14,	1876	Bell filed patent application, issued 3/7/1876 for improvement in telegraphy.
March 10,	1876	First working telephone invented and first complete sentence over wire by Bell.
June 25,	1876	Bell demonstrates telephone at U. S. Centennial Exposition in Philadelphia.
	1877	Western Union's American Speaking Telephone competes with Bell
January,	1877	Two additional patents issued to Bell for telegraphy improvements serving as technological forerunner for telephone.
August 4,	1877	Bell Telephone Company formed. 778 phones in operation.
Fall	1877	Gardiner Hubbard offers to sell Bell Telephone to Western Union president for $100,000. Offer is refused calling it a toy. Western Union retains Thomas Edison to improve on Bell's telephone.
	1878	Purchase of Emile Berliner's loose contact telephone transmitter by The Bell Co.
January 28,	1878	First commercial telephone exchange opens
February 21,	1878	First telephone directory issued.
May,	1878	Theodore N. Vail hired to head the Bell company.
	1879	Vail files suit against Western Union and American Speaking Telephone for infringement of patents but Western Union retreats and agrees to settlement out of court.
	1879	Switchboard invented by Leroy Firman, U. S. Engineer
	1879	System of telephone numbers developed.

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June 3,	1880	The first wireless telephone message is transmitted by Bell using his photophone.
November,	1881	American Bell acquires controlling interest in Western Electric.
September 4,	1884	First successful "long line" constructed and opened for public use.
March 3,	1885	American Bell forms subsidiary, American Telephone and Telegraph to construct, buy, own, lease or obtain lines beyond Massachusetts state limits for long distance purposes.
	1886	Western Union monopoly broken by Postal Telegraph.
December 31,	1887	Telephone listings reach over 200,000 in U.S.
	1889	First coin operated telephones patented by William Gray installed in Hartford Bank.
	1899	American Telephone and Telegraph (AT&T) becomes the parent company as Massachusetts corporate laws force the transfer of all Bell Company assets.
	1907	Consolidation of Western Electric's engineering division with AT&T's engineering produces Bell Laboratories.
	1910	Theodore Vail, AT&T chief, acquires controlling interest in Western Union from Jay Gould.
	1911	Vail consolidates Bell Associated Companies into regional organizations.
May 8,	1911	First direct telephone link between New York and Denver.
	1913	Nationalization of telephone and telegraph services proposed by U. S. Postmaster.
	1913	To avoid antitrust action, AT&T divests itself of Western Union holdings but retains Western Electric.
	1914	Government forces AT&T to dispose of Western Union stock.
	1918	U.S. Post Office Department takes control of the Bell System.
January 25,	1918	Long distance service between New York and San Francisco established.
November 8,	1919	Dial telephones introduced.

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August 2,	1922	Alexander Graham Bell dies at his home in Nova Scotia. All telephone service suspended for one minute in Canada and U. S. during funeral service.
January 7,	1927	TransAtlantic telephone service begins.
	1929	20 million telephones in U.S.
	1934	President Franklin Roosevelt implements Communications Act of 1934; creates Federal Communications Commission removing regulatory responsibility of interstate communications for the Interstate Commerce Commission.
	1949	The Justice Department files an antitrust suit against AT&T, alleging that AT&T and Western Electric tried to monopolize the telephone equipment market.
October 10,	1951	Bell utilizes transistor in trunk dial apparatus, initiating direct dial long distance.
	1954	94 million telephones worldwide, 52 million in U.S.
	1956	Consent decree limits AT&T to regulated telephone service and Western Electric to telephone equipment
	1956	AT&T signs consent decree limiting it to the provision of regulated telephone service and Western Electric to the provision of telephone equipment.
August 30,	1963	Hotline between Washington DC and Moscow
	1968	The Carterphone decision opened the door for interconnection of customer-owned equipment to the Bell network.
	1971	Specialized Common Carrier decision opens up business telecommunications market to competition.
	1974	U. S. government files antitrust suit against AT&T, alleging that AT&T monopolized interstate communications services, and seeking the divestiture of Western Electric and Long Lines.
	1982	AT&T and the Department of Justice settle antitrust case and AT&T agrees to divestiture.

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	1984	AT&T divests itself of the local phone company holdings creating the Regional Bell Operating Companies. AT&T retains its interexchange carrier (IXC) status, network and rights to manufacture equipment.
February 1,	1996	Telecommunications Act passes both Houses of Congress.
February 8,	1996	President Clinton signs Act into law.
August 8,	1996	FCC adopts interconnection rules - the first major rulemaking implementing the Telecom Act.
August 28,	1996	GTE Service Corporation and the Southern New England Telephone Company (SNET) file motion at FCC to halt implementation of FCC interconnection order, arguing the order oversteps FCC jurisdiction intended by the 1996 Act. According to GTE and SNET, the Act meant for pricing standards to be resolved by marketplace negotiations not the FCC.
October 15,	1996	U. S. Court of Appeals for the Eighth Circuit in St. Louis stays pricing provisions in FCC interconnection order—based on their opinion that the FCC did not give states enough leeway to set local phone rates.
November 7,	1996	Federal-State Joint Board issues its recommendations to FCC on universal service.
November 12,	1996	Supreme Court upholds U. S. Court of Appeals for he Eighth Circuit in St. Louis stay on pricing rules in FCC interconnection order.
November 18,	1996	Deadline for filing opening briefs for parties in favor of U. S. Court of Appeals for the Eighth Circuit in St. Louis, stay of FCC's interconnection order. USTA filing contends FCC has infringed upon jurisdiction Congress intended for the states.
December 16,	1996	Deadline for universal service comments.
December 23,	1996	Briefs are due for parties challenging the U. S. Court of Appeals for the Eighth Circuit in St. Louis stay of the FCC's interconnection order.

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CHRONOLOGY

December 24,	1996	FCC issues Notice of Public Rulemaking on access charge reform.
January 17,	1997	Targeted deadline for comments to FCC on access reform. U. S. Court of Appeals Eighth District in St. Louis begins hearing oral arguments.
February	1997	Targeted deadline for replies on access reform.
March	1997	Targeted deadline for Ex Partes on access reform.
May 8,	1997	Target date for FCC release of final universal service plan. Target date for FCC release of final access charge plan.

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