

GLOBAL TELECOMMUNICATIONS IN THE YEAR 2004

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In the late 1700s, it was difficult for anyone to envisage that the 1800s would be dominated economically by the railroads, transporting vast quantities of products around the country. In the late 1800s, few could have anticipated that the mighty railroad industry would soon play second fiddle to a far more powerful automobile industry in the 1900s, altering the lives of millions of people through speedy and affordable transportation. As we approach the end of this century, the telecommunications industry is poised to become a dominant technological and societal force worldwide. In the early twenty-first century, some of the most valuable companies in the world will be Japan's NTT, AT&T, British Telecom, France Telecom and DBT (the German phone company).

History is thus repeating itself, but with a twist. We have witnessed a gradual shift in emphasis, from "product transport" (the primary concern of the railways) to "people transport" (the domain of the automobile) to "information transport" (the business of telecommunications). As information movement moves front and center in the global economy, the once-mature telecommunications industry is being catapulted into an exciting phase of explosive growth and technological renewal.

TELECOMMUNICATIONS' SPECTACULAR FUTURE

The telecommunications industry has a spectacular future because it is exploding in three areas:

WIRELESS COMMUNICATIONS: Cellular subscribers are growing at 40% per year in the United States, and at even higher rates in some other countries. With fifteen million subscribers in the U.S. by the end of 1993, the cellular industry has penetrated the market much faster than the microwave, the VCR or the camcorder. Yet, the number of people who have so far been touched by this and other wireless technologies remains a small fraction of the population, even in developed countries. Huge growth will continue for years, even decades to come, as the technology for wireless communications gets better, more versatile and more affordable.

MULTIMEDIA COMMUNICATIONS: Suddenly, the possibilities for what telecommunications can do for people and businesses have become almost limitless. Digital electronic technology now

makes it possible to treat all forms of information—voice, print, pictures, video, data—in the same manner. As depicted in the figure, future industries will be based on functions performed with information rather than on the form of information. No longer will we need separate industries (such as publishing, broadcasting and telephony) to handle each form of information; modern telecommunications networks will be able to transport any kind of information anywhere, with perfect clarity and with full "interactivity."

Interactive multimedia communication will create enormous growth for the telecommunications industry; it has the potential to transform nearly every aspect of life as we know it: how we communicate with businesses and individuals, how we work, where we work, how we shop, how we get entertained, how we get educated, how we receive health-care and other personal services, to name just a few areas. Indeed, telecommunications technologies are becoming so powerful that soon, if are able to think of an application, you will probably be able to do it. Increasingly, we are limited less by technology and more by our imaginations and our appetite for change.

The Information Industry

WHAT PEOPLE DO Information Functions	HOW THEY DO IT Information Forms				
	TEXT	IMAGES	VOICE	VIDEO	DATA
CREATE (Content)	P U B L I S H I N G	P H O T O G R A P H Y	T E L E - C O M M U N I C A T I O N S	E N T E R T A I N M E N T	C O M P U T I N G
DISPLAY (Devices)					
STORE (Databases)					
PROCESS (Applications)					
DISTRIBUTE (Transport)					

GLOBAL OPPORTUNITIES: For an industry which is almost a hundred years old, telecommunications is still in its infancy globally. Consider this startling fact: *over half the world's population has never made a simple voice phone call (let alone send a fax or have a videoconference!) in their life.* The worldwide subscriber base for the industry is currently only about 500 million, and there are only six phones per 100 people worldwide.

The potential for growth here is so large as to be almost mind-boggling. Think of the life-transforming and enriching potential of this technology, and then multiply that by a billion Chinese consumers, 800 million Indians, 200 million Russians, 180 million Indonesians, 100 million Brazilians, 80 million Mexicans and so on!

In the remainder of this article, we will concentrate on the global opportunities in the industry.

THE DRIVERS OF GLOBAL GROWTH

There are four key forces which are creating global growth in the telecommunications industry:

- Privatization of state-owned telecommunications monopolies
- Deregulation of telecommunications and related industries
- Rebuilding the existing infrastructure in advanced nations
- Building new infrastructure in emerging nations

Privatization

The telecommunications industry was historically regarded as a "natural monopoly" and a critical part of a country's infrastructure. As a result, it was organized as a government-owned and operated monopoly in virtually every country (except the United States). Typically, it was part of a "PTT" (post, telegraph and telephone) agency.

Now, however, a tidal wave of privatizations of government-owned telephone monopolies has started worldwide. For example, all twenty-two phone companies in Latin America are expected to be privatized by the year 2000. In Europe, the British and Dutch phone industries have already been privatized, and the French and German companies will soon follow.

Privatization is an irresistible course of action for governments for three major reasons: first, to make their telecommunications industry far more efficient and responsive to the needs of customers; second, to rapidly bring their telecommunications infrastructure up to world standards (thus enabling the development of other industries); and third, to raise large amounts of sorely-needed money which can be used in other development projects. For example, the German government expects to raise \$40 billion by privatizing the phone company there, which will help pay for its rebuilding efforts in eastern Germany.

Privatizations represent a major growth opportunity for telecommunications companies which have the resources and are willing to invest for the long-term. Several U.S. phone companies have invested in privatizations: GTE in Venezuela, Southwestern Bell in Mexico, and Ameritech and Bell Atlantic in New Zealand. AT&T is ideally positioned to succeed in this area, since it has several important advantages over most other telecommunication companies: an outstanding reputation for quality and reliability, long experience as a private operator, ready access to capital, capabilities in both manufacturing equipment as well as in operating networks, and its own cellular equipment and service capabilities. Far more than any other company in the world, AT&T can offer "one-stop-shopping" to governments looking to privatize.

Deregulation

In addition to privatizing state-owned monopoly phone companies, governments worldwide are interested in fostering competition within the industry, i.e., they want more than one phone company to serve the public. This trend has led to a host of opportunities for phone companies to enter other markets as "alternative" providers, often competing with the not-yet privatized government-owned phone company. Again, U.S. carriers have already been active in this area: Bell-South is part of a consortium running Optus Communications, Australia's second phone company, and Nynex, Southwestern Bell and US West are all separately involved in various cable and telephony ventures in the United Kingdom.

Even in countries where there is no envisioned second provider of local phone service, there are opportunities to enter as a provider of long distance services (as MCI recently announced it would do in Mexico) or in the exploding area of wireless communications. Each of the U.S. regional phone companies has at least two (and in some cases eight) overseas ventures providing cellular or digital cellular services. The ventures are all thriving, due to the pent-up demand in most of the markets, and many have reached positive cash flow in two to three years.

Yet another opportunity in still-regulated markets is to build private networks for corporate customers. Finally, the telecommunications equipment market in most countries is wide open, and is currently growing rapidly. There are attractive opportunities for AT&T to sell a range of equipment—everything from handsets to PBXs, customer premises equipment, key systems and network equipment.

Rebuilding Existing Infrastructure

Advanced countries worldwide are planning to rebuild their telecommunication infrastructures, to move from analog/narrowband/copper to digital/broadband/fiber systems. Two factors are driving this: the need to upgrade the capabilities of the telecommunication network to enable advanced interactive multimedia services; and the overwhelming advantages of new electronic technologies over the old electromechanical ones.

Electronics-based networks are more reliable and fault-tolerant, and are thus cheaper to maintain than electromechanical networks. The substitution parallels earlier technological shifts such as the replacement of spring-driven mechanical watches with quartz-based electronic ones and of mechanical adding machines by electronic calculators.

Electronic networks are thus more capable as well as more affordable. The upgrading of infrastructures represents a huge opportunity for telecommunications equipment providers such as AT&T Network Systems. In some countries, such as the U.S., the ongoing convergence between the telephone and cable industries likewise represents a major opportunity for products such as high speed digital switches, video servers and many others.

Building New Infrastructure

Emerging nations represent the prime economic engines of the future. In the nineteenth century, the world's economy grew through growth in Europe, and in the twentieth century, it grew through growth in North America. In the twenty-first century, we will witness tremendous growth through partnerships between developed and developing countries—what we call North-South alliances.

In particular, emerging nations with large domestic markets (populations greater than, say, 50 million) will represent the prime opportunity for growth, not only in telecommunications but in a variety of industries. For example, General Electric and Motorola have recently announced that they see their future largely in countries such as China, India and Mexico. These markets are already large and are growing rapidly. Based on a measure called Purchasing Power Parity, China is already the world's fourth largest economy. At current growth rates, it will overtake Germany in three years, Japan in twelve years and the U.S. in 35 years.

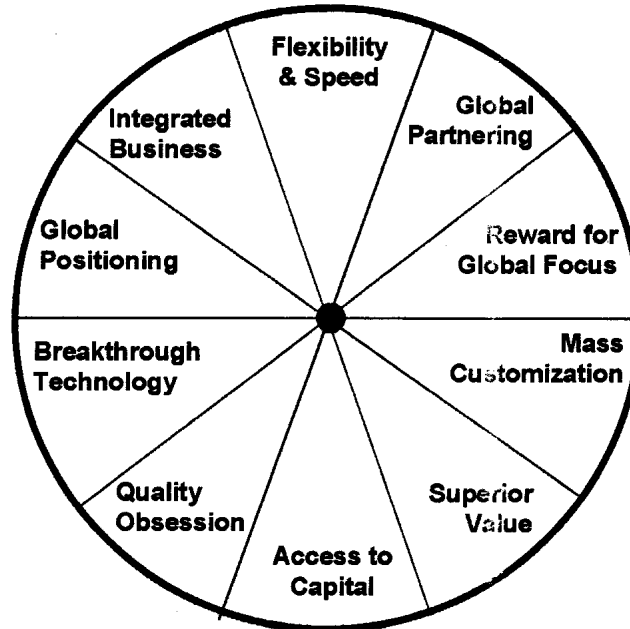
The demand for telecommunications services in these countries is virtually insatiable; thanks to rising affordability of telecommunications technologies, and a widespread recognition of telecommunications' central role in economic development, this demand can now be addressed. China alone is expected to add a whopping 20 million access lines a year for the indefinite future. Many of the new access lines will be wireless, as developing nations take advantage of their lack of "sunk" copper investment and leapfrog directly into electronics-based digital wireless systems. Investments by these countries in telecommunications are now viewed as a top priority, of even greater importance than electricity, roads and bridges. It is expected to create an upward spiral of economic development, raising living standards and thus demand for goods and services worldwide.

WHAT WILL IT TAKE TO SUCCEED?

As we mentioned earlier, most of the companies with the highest market valuations in the early part of the next century will be from the telecommunications industry. Even with all the coming growth and exciting opportunities in the wide world of telecommunications, success will not be automatic for any company. There is already intense competition and jockeying for position between several huge global companies and a large number of smaller companies.

"Status quo" or reactive management styles will not succeed in the dynamic global telecommunications industry of tomorrow. Companies will have to create their own opportunities and take advantage of them by practicing what we call "anticipatory management"—to be able to articulate a vision of the future and chalk out a strategy for achieving it.

WHAT WILL IT TAKE TO SUCCEED?



Companies will have to emphasize a number of key areas in particular:

1. Global Positioning

Companies aspiring to success in the world marketplace will have to achieve a global orientation and global name recognition. Ford, for example, has created a worldwide identity, and incorporates approaches such as "global sourcing" in its operations. Likewise, General Electric and Coca Cola are known worldwide.

2. Focused, Integrated Operations

Companies will have to define and hone their "core competencies," and exit from businesses in which they lack world class abilities. For example, Coca Cola sold its Columbia Pictures division,

and GE has shed many lines of products so that it can concentrate on creating a strong global position in the remaining ones. Companies will also have to integrate their people and processes across national boundaries, through frequent rotation of personnel and the adoption of globally standardized systems. It will be commonplace in such companies for a German, for example, to manage the U.S. market, while an American may be in charge of Korean operations and so on. This will call for a high degree of cross-cultural awareness and sensitivity. Given the extent of diversity within its borders, this will be a major source of advantage for U.S.-headquartered companies.

3. Flexibility, Speed and Productivity

Large companies will have to be as nimble as small ones in responding rapidly to fleeting opportunities. With shifting geopolitical dynamics, the "windows of opportunity" are often very brief. Companies have to be highly adaptive and learn to reduce their "time to market" with new products and services drastically. For example, Bell Atlantic has greatly speeded up its customer service by redesigning many of its processes, and MCI has become well known for the speed with which it is able to bring new products and programs (such as Friends and Family and 800-Collect) on stream. They will also have to continuously increase their productivity (output per worker) to compete globally. The future belongs to the lean competitors, who are able to focus all their resources on the customer rather than on internal coordination and oversight.

4. Global Partnering

Most global ventures in telecommunications require companies to form consortiums in order to bid or compete. A company that is (perhaps culturally) not able to partner with suppliers, customers and even competitors would thus be at a major disadvantage. We see this need illustrated very clearly in another formerly regulated, transportation-based industry: airlines. As that industry globalizes, we are starting to see the importance of cross-border alliances, such as those between Delta, Swissair and Singapore Airlines, Northwest and KLM, and US Air and British Airways.

5. Quality Obsession

Outstanding quality will be a minimum requirement to even be in the running for global business. Companies will have to benchmark their performance levels against the best in the world, and adopt continuous improvement processes to stay ahead of competitors. Japanese companies such as Sony, Toyota and Honda have excelled at this, as have U.S. companies such as Federal Express, Motorola and AT&T (all winners of the coveted Malcolm Baldrige National Quality Award).

6. Mass Customization

Increasingly, companies are called upon to provide customized products to customers at costs comparable to mass produced ones. Companies can do this by creating flexible production systems, and by investing heavily in information technology. In Motorola's pager factory in Boca Raton, Florida, for example, pagers customized in twenty different ways roll off the robotic assembly line at a cost comparable to mass-produced pagers made at other factories.

7. Superior Value

Customers worldwide are becoming accustomed to getting better products at lower prices, i.e., superior value over time. Companies thus have to constantly focus on how they can create new value for customers, while costs remain flat or even decline. Hewlett-Packard is an outstanding practitioner of this with its LaserJet series of printers. Each new printer offers much better performance at a lower price. Toyota has long led the J.D. Power customer satisfaction surveys by consistently providing superior value to all its customers—from Lexus buyers at the high end to Camry buyers in the middle range and Corolla and Tercel buyers at the low end of the market.

8. Breakthrough Technology

With the rapidity of technological change in the telecommunications industry, the importance of research and development has never been greater. Technological breakthroughs will be crucial at both the basic as well as applied levels. In other words, companies will have to periodically break prevailing price/performance norms. For example, Sony has excelled at creating new products that meet needs customers never thought they had, with products such as the transistor radio, "Walkman" stereos and compact disk players.

9. Access to Capital

Upgrading and building telecommunications infrastructure usually requires huge outlays of capital, and the telephone companies who are the customers often will not have adequate capital to fund them. Suppliers who can provide financing themselves, or can obtain it through creative risk-and-profit sharing arrangements, will have a significant edge. Estimates are that the U.S. alone will require \$200 billion in capital spending to upgrade its infrastructure. Similarly, China's plans to add 20 million access lines a year will require huge capital expenditures.

10. Reward for Global Focus

All the talk of globalization becomes only so much lip service if companies do not adjust their internal reward and recognition systems accordingly. In other words, employees will have to be given incentives to undertake initiatives related to the company's global aspirations. Companies such as

3M, Procter and Gamble and General Electric have all incorporated such incentives into their management systems.

AT&T'S GLOBAL FUTURE

Few companies in the world today are better positioned than AT&T to benefit from the coming global explosion in the telecommunications industry. AT&T owns the world's premier R&D facility in Bell Labs. It is unique in being the only major telecommunications company to be both an equipment as well as a service provider. More importantly, it is a world-class player in both these areas. With its size and formidable capabilities and resources, AT&T is in a position not only to respond to the forces of global change, but also to shape and accelerate them.

As the company aggressively pursues its global vision, it will change in several ways. The AT&T employee of the future will be a world citizen, equally at home in New Jersey, New Zealand or New Guinea. He or she will be highly skilled in task proficiency, and will also function well as a member of multiple teams. Such teams may be spread out around the globe, and may meet in videoconferences. Employees will undergo frequent training and continuous upgrading of skills. More and more employees will be given customer-responsibilities—many will interact directly with external customers, while the rest will have internal customers. The satisfaction of those customers will loom large in how every employee gets compensated and promoted. Every employee will have to be a sophisticated user of the latest information tools; as a provider of technology-based solutions, AT&T will have to showcase for its customers how it uses those technologies to achieve radical improvements in performance.

No company or country will enjoy a monopoly on knowledge. The challenge for AT&T will be to tap the vast knowledge and expertise of its people and bring it to bear on every customer and every opportunity.

No other industry in the world can lay claim to such an exhilarating or challenging a future. None will have the satisfaction of improving the quality of life for so many people around the world, and for bringing the world closer together. No company is more enviably positioned within its industry than AT&T. Enjoy the ride!

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