

**BROADBAND: COMPETITION AND CONSUMER
CHOICE IN HIGH-SPEED INTERNET SERVICES
AND TECHNOLOGIES**

HEARING

BEFORE THE

COMMITTEE ON THE JUDICIARY

UNITED STATES SENATE

ONE HUNDRED SIXTH CONGRESS

FIRST SESSION

ON

EXAMINING COMPETITION AND CONSUMER CHOICE IN BROADBAND,
HIGH-SPEED INTERNET SERVICES AND TECHNOLOGIES, FOCUSING
ON THE IMPACT OF RECENT CONSOLIDATION IN THE COMMUNICA-
TIONS INDUSTRY

—————
JULY 14, 1999
—————

Serial No. J-106-36

—————

Printed for the use of the Committee on the Judiciary



U.S. GOVERNMENT PRINTING OFFICE

COMMITTEE ON THE JUDICIARY

ORRIN G. HATCH, Utah, *Chairman*

STROM THURMOND, South Carolina

CHARLES E. GRASSLEY, Iowa

ARLEN SPECTER, Pennsylvania

JON KYL, Arizona

MIKE DEWINE, Ohio

JOHN ASHCROFT, Missouri

SPENCER ABRAHAM, Michigan

JEFF SESSIONS, Alabama

BOB SMITH, New Hampshire

PATRICK J. LEAHY, Vermont

EDWARD M. KENNEDY, Massachusetts

JOSEPH R. BIDEN, JR., Delaware

HERBERT KOHL, Wisconsin

DIANNE FEINSTEIN, California

RUSSELL D. FEINGOLD, Wisconsin

ROBERT G. TORRICELLI, New Jersey

CHARLES E. SCHUMER, New York

MANUS COONEY, *Chief Counsel and Staff Director*

BRUCE A. COHEN, *Minority Chief Counsel*

(II)

CONTENTS

STATEMENTS OF COMMITTEE MEMBERS

	Page
Hatch, Hon. Orrin G., U.S. Senator from the State of Utah	1
Leahy, Hon. Patrick J., U.S. Senator from the State of Vermont	2
DeWine, Hon. Mike, U.S. Senator from the State of Ohio	4
Kohl, Hon. Herbert, U.S. Senator from the State of Wisconsin	6

CHRONOLOGICAL LIST OF WITNESSES

Panel consisting of C. Michael Armstrong, chairman and chief executive officer, AT&T Corp., Washington, DC; Ivan G. Seidenberg, chief executive officer, Bell Atlantic Corp., New York, NY; Alex J. Mandl, chairman and chief executive officer, Teligent, Inc., Vienna, VA; and William L. Schrader, chairman and chief executive officer, PSINet, Inc., Herndon, VA	8
Panel consisting of Anna-Maria Kovacs, first vice president, Janney Montgomery Scott, Boston, MA; Gene Kimmelman, co-director, Washington Office, Consumers Union, Washington, DC; and Kevin M. Moore, director, Deutsche Banc Alex. Brown, Baltimore, MD	56

ALPHABETICAL LIST AND MATERIALS SUBMITTED

Armstrong, C. Michael:	
Testimony	8
Prepared statement	10
Kimmelman, Gene:	
Testimony	60
Prepared statement	62
Kovacs, Anna-Maria:	
Testimony	56
Prepared statement	57
Mandl, Alex J.:	
Testimony	21
Prepared statement	23
Moore, Kevin M.:	
Testimony	75
Prepared statement	76
Schrader, William L.:	
Testimony	27
Prepared statement	29
Seidenberg, Ivan G.:	
Testimony	15
Prepared statement	16

**BROADBAND: COMPETITION AND CONSUMER
CHOICE IN HIGH-SPEED INTERNET SERV-
ICES AND TECHNOLOGIES**

WEDNESDAY, JULY 14, 1999

U.S. SENATE,
COMMITTEE ON THE JUDICIARY,
Washington, DC.

The committee met, pursuant to notice, at 10:14 a.m., in room SD-628, Dirksen Senate Office Building, Hon. Orrin G. Hatch (chairman of the committee) presiding.

Also present: Senators Thurmond, Specter, DeWine, Ashcroft, Abraham, Leahy, Kohl, Torricelli, and Schumer.

**OPENING STATEMENT OF HON. ORRIN G. HATCH, A U.S.
SENATOR FROM THE STATE OF UTAH**

The CHAIRMAN. I apologize for being just a little bit late, but I had problems I had to handle before I got here, and so I apologize.

Good morning, and welcome to today's hearing on competition and consumer choice broadband Internet services and technologies. I first would like to thank all of our witnesses today for their time and cooperation, and I hope that with this hearing we will better understand the so-called broadband issue which all of us have heard so much about recently.

The focus of the hearing will be on how recent consolidation in the communications industry, especially within the cable industry, might affect competition and consumer choice for high-speed Internet service and content.

Competition, in my opinion, is crucial to the future of the Internet. It is competition that has created the robust Internet economy that we are experiencing today. Companies and venture capitalists have made unprecedented investments in new Internet products, services and technologies. Continued growth in this area is vital to our economy and our global leadership in the information technology sector. Indeed, many of the new technologies that we enjoy today are the fruits of deregulatory objectives of the 1996 Telecommunications Act.

As we continue to deregulate the telecommunications industry, as envisioned by the 1996 Act, it is our hope that fair and rigorous competition in the communications sector ultimately will replace burdensome and unnecessary government regulations. If further deregulation of the telecommunications markets is warranted—and I am not saying that it is at this point—this committee and its

Chairman intend to continue to work with Senator McCain and the Commerce Committee to do what is fair.

In any event, as we move ahead with the deregulations of the 1996 Act, timely enforcement of antitrust laws, as established through sound legal and economic principles, will become even more important in ensuring a competitive marketplace. As I have said before, proper enforcement of antitrust laws today will and should avoid heavy-handed regulation of the Internet tomorrow. That is what we are here to examine today—the status of competition in the high-speed service and technology markets.

Today's hearing is about the future of the Internet. And when we talk about the future of the Internet, we mean broadband. It is only with broadband that the full potential and benefits of the Internet and electronic commerce can be realized. For example, today's hearing is being streamed over the Internet. Those who are watching it online will appreciate how much better the images and sounds would be with broadband access that can carry 100 times as much data.

As we move forward, it is important to have an environment that provides proper incentives for companies to continue to invest in broadband technologies. At the same time, making sure there is competition in the broadband service market will be critical. If we can achieve these goals, consumers and Internet companies will both benefit.

No single company should control who can access or develop applications or content for the Internet, whether that company owns the architecture, the hardware, the content of the operating systems needed to navigate broadband pipes. As such, we should try to address any market distortions that prevent software, telephone, or cable companies from entering the race to bring cheaper, better technologies to the consumer. We need to determine what ultimately is best for consumers. There are many important issues that deserve to be examined here and we are going to start on those today.

Now, I particularly appreciate all of you who are appearing here today, and naturally look forward to your testimony. You are key leaders in this area and we just simply need to have your input.

Let me now turn to our Ranking Member, Senator Leahy, and then I will recognize the Chairman and the Ranking Member of our Antitrust Subcommittee, Senators DeWine and Kohl, respectively, for their opening statements, and we will move on from there.

Senator Leahy.

**STATEMENT OF HON. PATRICK J. LEAHY, A U.S. SENATOR
FROM THE STATE OF VERMONT**

Senator LEAHY. Thank you, Mr. Chairman. When I was first elected to the Senate back in 1974, in the post-Watergate era, we knew it was a time of political change in America. But I didn't realize it was also the year that the Internet was being launched. That was the year that Vince Cerf and Bob Kahn published the design for the Transmission Control Protocol, TCP, one of the core technologies that makes the Internet run. In fact, they used the word

“Internet” for the first time back in 1974 to just say how the technology was going to work.

Think of that 25 years, the number of industries that have grown up that owe their existence to the Internet, and solely to the Internet. New applications, new businesses, new user demands are evolving exponentially. In fact, even with the experts in this room today, nobody could sit here and predict, 5 or 10 years from now, every type of Internet usage there will be. It really has been the engine of the so-called information age.

Mr. Chairman, I commend you and I commend Senator DeWine and Senator Kohl for holding this hearing because the issues are critical to the future of the Internet. We have great panels, a panoply of issues, and we should listen to them.

I have asked over the past 3 years whether the 1996 Telecommunications Act has fulfilled its promise of more competition or whether it has simply promoted more consolidation. I appreciate that the Bell companies, including Bell Atlantic which provides my local telephone service both at my tree farm in Vermont as well as my home in Virginia, are anxious to compete in the long-distance telephone market and to offer data transmission services outside their regions. I want them to be there competing, but only when they satisfy the requirements under the law for unbundling their local loops and allowing interconnection to competitors.

I have raised questions about the elimination of all cable rate regulation called for under the Telecommunications Act. I raised those questions because many of us have seen our cable rates increase over the last few years, just the opposite of what we were promised was going to happen.

We are concerned that the consolidation in the cable industry, which will be accelerated further by AT&T's purchase of TCI and proposed purchase of MediaOne, is going to result in even higher cable rates. These are important issues, and the committee may have to have other hearings to explore them.

The issue I want us to focus on today is the Internet because it has had such a profound effect on our society. It has been a high-powered engine for our economy. It has been a vehicle for citizens to interact with the Congress, our government, businesses large and small, and people across the world.

When I am having my breakfast and I log on and I have a note from a friend in Sri Lanka, and somebody else in another part of the world, as well as a neighbor in Vermont, it is a pretty amazing thing. What has made the Internet so successful in the narrowband or dial-up world is that virtually anybody can start a business or put up a Web site, with very important information at low cost and few barriers to entry. It has been an open network that has been healthy for the businesses using the Internet, and healthy for consumers.

But when we move from a world of primarily dial-up access to the Internet to the high-speed broadband world, the same open environment has got to thrive and exist. We all have an interest in making sure that the economic and democratic vitality of the Internet continues to flourish, that broadband is available in all parts of the country, urban or rural, rich or poor.

A significant concern has been raised about whether proprietary cable modem broadband service threatens the open architecture of the Internet, and whether it would threaten to stifle innovation in Internet services. To be specific, cable operators are deploying their broadband services through @Home under exclusive contracts. Customers get their high-speed service bundled with the @Home ISP and content service. They are not given the choice of paying a reduced fee for the high-speed pipe alone.

Generally if these customers want to get their Internet access through some other ISP, or to view proprietary content from another online service provider, they have to pay a second subscription fee on top of the full @Home fee.

Just as Bell companies with monopoly holds on the local telephone loop are required under the Telecommunications Act to unbundle their services and allow interconnection, some local municipalities have or are considering requiring cable operators to unbundle their high-speed pipeline and allow customers to use other ISP's and online services.

Yet, despite the risks that consolidation in the telecommunications and cable industry poses for access to broadband networks, would we have the next generation of high-speed broadband networks without the investment that consolidation reflects? These are legitimate questions.

How could concentrated market power over high-speed broadband networks be used as leverage to affect the price, and therefore the accessibility? And if you don't have concentration, will you have the investments so you could have it? I mean, do we have a Hobson's choice here? Do we need regulation to ensure open access to broadband networks or can we expect the marketplace to do it?

So I am not suggesting I have the answers to all these questions, Mr. Chairman, but I think they are valid questions and I think that they are questions that are going to affect life and commerce around our country. They are certainly going to have a major effect in a rural State like mine.

Thank you.

The CHAIRMAN. Thank you, Senator.
Senator DeWine.

**STATEMENT OF HON. MIKE DeWINE, A U.S. SENATOR FROM
THE STATE OF OHIO**

Senator DEWINE. Mr. Chairman, as the Chairman of the Antitrust, Business Rights and Competition Subcommittee, I have chaired a number of antitrust subcommittee hearings on telecommunications issues, and I am just delighted that we are having this joint hearing this morning.

I am going to focus today on the changing market dynamics of the telecommunications industry. It has almost become a cliché, I guess, to say that the Internet is changing commerce in America. At times, in fact, it appears to be revolutionizing commerce.

The AT&T/MediaOne deal is certainly the latest example of how the Internet is changing the face of business in the United States. As the demand for high-speed data services has skyrocketed, more and more telecommunications providers have decided that they

need to provide broadband access so that consumers can choose from a bundle of different services quickly and easily.

AT&T believes that its deal with MediaOne will help it do that. And I might add that many of AT&T's competitors are worried about the exact same thing. I am sure that we will have a great deal of discussion on this topic today during today's hearing. I am looking forward to hearing the testimony.

For the moment, Mr. Chairman, however, I would like to focus on the specific areas of local phone service and video service. Since Congress passed the Telecom Act of 1996, we have all seen a great deal of change in the industry. Unfortunately, not all of that change has been what we expected when we crafted the law.

Instead of vigorous competition, too often we have seen mergers among industry participants. Litigation has slowed the advent of telephone competition in local markets. And the Federal Communications Commission has often been slow to resolve disputes between competitors. As a result of the logjam, competition has developed more slowly than many had anticipated. There are some indications, however, that the pace of competition is picking up.

Much of the litigation has been decided, and some of the regional Bell operating companies appear to be close to achieving compliance with section 271 of the Telecom Act, which will allow the RBOC's to offer long-distance service within their own regions. Still, even where competition does appear to be thriving, it is mostly for business customers. Competition in local residential service remains very limited.

This lack of competition for local residential service is one of the things that makes the proposed merger between AT&T and MediaOne so intriguing. AT&T intends to use the cable wires to provide facilities-based local phone service to residential customers. If this plan works, it will help fulfill one of the fundamental goals of the Telecom Act and provide significant competitive benefits to consumers throughout our country.

However, the AT&T/MediaOne deal does pose some serious policy concerns. If approved, AT&T would become the largest cable operation in the country, with an ownership stake in facilities that reach approximately 60 percent of the Nation's cable subscribers. In fact, some have asked the question, does the deal reassemble the old Ma Bell monopoly under the new name of Ma Cable?

Beyond the obvious concentration concerns raised by such a large market share, we need to look closely at the level of cross-ownership in industry. Many of the cable systems have a share in each other and are vertically integrated to include programming holdings. We will explore today what, if any, impact is created by that particular industry structure.

For example, it seems possible that AT&T might be able to skew the market if it decided to favor programming in which it had an ownership interest. This is certainly a troubling notion which needs to be explored. It may be necessary for AT&T to divest itself of some systems or to find some other way to gain access to cable wires other than buying them. As policymakers, Mr. Chairman, we must be wary of creating one monopoly in order to dismantle another.

This is an especially difficult area to examine because the FCC does not currently have any regulations in effect describing how much national market share a cable company may have, or how exactly to determine when a stake in another company rises to a level of ownership for purposes of attribution. The FCC has been dragging its feet on resolving these issues, and it is crucial that they quickly finalize their regulations so that the companies involved in this industry are able to move forward with certainty.

Mr. Chairman, beyond the FCC regulations, we need to keep a close eye on the competitive structure of the video industry, in general. Although cable rates were deregulated recently, the industry still has a way to go before it is fully competitive. To make sure that we were kept informed about events in the industry, last year Senator Kohl and I commissioned a study by the GAO, the Government Accounting Office, to examine the state of competition in the telecommunications industry. The study is being conducted in three parts and we are releasing the first part today. The first part focuses on cable competition. The study confirms what we have learned in our hearings and meetings on this issue over the past 2 years. Video competition is on the way, but we are not there yet.

Mr. Chairman, in conclusion, we will keep working to make sure that cable rates do not skyrocket and that competition to cable is, in fact, enhanced. Along those lines, we are currently holding conference meetings on the Satellite Home Viewer Improvements Act, which will provide increased opportunities for satellite providers to compete with cable television. Senator Kohl and I have worked closely with Chairman Hatch and Ranking Minority Member Leahy on that legislation. And with their continued leadership, I am hopeful that we will have legislation finalized in the next month or two.

Again, Mr. Chairman, I congratulate you on holding this joint hearing with us today.

Thank you.

The CHAIRMAN. You bet.

Senator Kohl.

**STATEMENT OF HON. HERBERT KOHL, A U.S. SENATOR FROM
THE STATE OF WISCONSIN**

Senator KOHL. Thank you, Mr. Chairman. Let me speak briefly today about these promising new technologies, including broadband, and their relationship to competition. And then allow me to switch gears to AT&T's proposed purchase of MediaOne which, though not the largest deal we have seen recently, is worth focusing on because it signals the rapid pace of change in the telecom marketplace.

First, the future of the telecommunications industry, many believe, lies in broadband networks. And we have already caught a glimpse of this brave new world, things like stereos without salesmen, bookstores without shelves, the ability to purchase without leaving your home or your office. But the news of broadband breakthroughs fail to explain when consumers will see the benefits and whether they will be available to many or just a privileged few.

A key question today is: What is the proper role of government in this environment of convergent technology? Sometimes, this answer is easy. We need to prevent bottlenecks. We do best when we

avoid heavy-handed regulation and rely on market forces, and we don't need an antitrust carve-out for high-tech companies, as a few have suggested, because the existing antitrust laws have served us so well for so many years.

But some answers are more difficult. How big is too big? When is the marketplace sufficiently competitive that government does not need to regulate any further? When does cross-ownership and vertical integration enhance efficiency and when does it choke innovation? Is the broadband pipe truly a unique product possibly deserving of non-discriminatory access, or is this only a self-serving characterization advanced by rivals in the marketplace?

Second, with respect to AT&T's acquisition of MediaOne, the answers are also complicated. On the one hand, the merger seems to realize much of the hope and promise of the 1996 Telecom Act, particularly in its potential for local residential telephone competition and speedier rollout of broadband through the existing cable pipe. If AT&T follows through on its promises—and it has every reason to do so—that will help consumers even more by increasing the incentive for people like yourselves, Mr. Seidenberg, Mr. Schrader and Mr. Mandl, to compete even more aggressively.

On the other hand, AT&T's acquisition of MediaOne also deserves some scrutiny. It continues a troubling trend of telecom and cable consolidation that has accelerated enormously since the 1996 Act and that our cable competition report highlights today. Indeed, as we discussed last year, this deal makes clear that a Japanese-style keiretsu is emerging in the American media. We aren't going to break it up, so we better learn how to make it work more competitively for the people that we represent.

While there are no clear answers, regulators ought to think about a variety of approaches when considering AT&T/MediaOne, among them requiring more complete separation between AT&T and its programming partner Liberty Media, or making AT&T sell off some portion of its interest in Time Warner, which will increase dramatically as a result of this acquisition.

The FCC, which has slow-walked its rulemaking on cable ownership, needs to pull itself together and figure out whether these rules, which were mandated when today's convergent marketplace did not exist, still make sense today. Finally, Congress needs to move, and move quickly, local-to-local satellite legislation. It would be shameful if we didn't enact this measure before the August recess, and we on the Judiciary are ready to conference at any time.

Again, Mr. Chairman, thank you for holding this hearing, a hearing that looks at both the big picture and the big deal with big-thinking witnesses who will help us make big, thoughtful policy choices.

Thank you, Mr. Chairman.

The CHAIRMAN. Well, thank you, Senator.

Our first witness today will be Mr. Michael Armstrong. We welcome you, Mr. Armstrong. Mr. Armstrong is the Chairman and CEO of AT&T, and he has been that since November of 1997. Prior to joining AT&T, Mr. Armstrong spent more than 3 decades with IBM, where he became Senior Vice President and Chairman of the Board of IBM World Trade Corporation.

Next, we will hear from Mr. Ivan Seidenberg, Chairman and CEO of Bell Atlantic Corp. Mr. Seidenberg has over 30 years experience in the communications industry. Prior to joining Bell Atlantic, Mr. Seidenberg served as Vice Chairman of NYNEX Telecommunications Group, as well as President of its Worldwide Information and Cellular Services Group. We are pleased to have you here with us, Mr. Seidenberg, as well.

Then we will hear from Mr. Alex Mandl. Mr. Mandl has been Chairman and CEO of Teligent since the company's founding in August 1996. Teligent is a company which offers local, long distance high-speed data and dedicated Internet access through wireless microwave technology in major markets throughout the United States. Prior to Teligent, Mr. Mandl served as President and Chief Operating Officer of AT&T, where he was responsible for directing the company's long distance, wireless and local communications services. We are glad to have you here.

Our final witness on the first panel is Mr. William Schrader. Mr. Schrader is Chairman, CEO and founder of PSINet, Inc., a global facilities-based Internet communications company. Prior to founding PSINet, Mr. Schrader was founder, Chairman and CEO of NYSERNet, a corporation that created the first regional Internet network. So we are really pleased to have you here as well.

This is a great first panel. I am counting on all of you to help us understand the problems that exist here and what we really ought to do about them, if anything. Later, on our second panel we will be pleased to hear from Ms. Anna-Maria Kovacs, Mr. Gene Kimmelman and Mr. Kevin Moore, who will provide their expert opinions on antitrust concerns, consumer choice, and Wall Street investor reactions regarding the broadband issue.

So I want to thank all of our distinguished witnesses for being here today, and we certainly look forward to all of your testimony. So we will begin with you, Mr. Armstrong, and we will go right across the board, and then we will have some questions for you.

PANEL CONSISTING OF C. MICHAEL ARMSTRONG, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, AT&T CORP., WASHINGTON, DC; IVAN G. SEIDENBERG, CHIEF EXECUTIVE OFFICER, BELL ATLANTIC CORP., NEW YORK, NY; ALEX J. MANDL, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, TELIGENT, INC., VIENNA, VA; AND WILLIAM L. SCHRADER, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, PSINET, INC., HERNDON, VA

STATEMENT OF C. MICHAEL ARMSTRONG

Mr. ARMSTRONG. Thank you, Mr. Chairman. I would like to depart, if I may, from the submission that I made and explain something I am asked, whether it is in Washington or wherever AT&T seems to show up, which is why, not what, are you doing investing \$140 billion in a 17-month period. That is a lot of money even for AT&T.

And it is really rooted in the Telecom Act of 1996, and what we are attempting to do is to invest in a facilities-based broadband capability to compete in local communications services. We are only about 18 percent of the communication revenue in the industry

today, and we are zero percent of the local telephony service today. And with TCI and MediaOne, we will pass about 24.5 million homes. We will be connected to about 60 percent of those homes.

There are about 103 million residences in America, so that is something like a 23-percent opportunity for our facilities strategy to offer those local communications services. It is tough to get to the 60 percent unless you go by the discarded—or “suspended” is a better word—the suspended rules that are in the FCC that the court found against the First Amendment, where we would be given full attribution for things such as 5-percent investments that we might have in an old TCI affiliation. And that would give us 100-percent attribution for that affiliation, and that is how we get to Mike DeWine’s 60 percent, through those attribution rules, which really have to be redone because I wouldn’t say that 5 percent of a 3- or 4-million subscriber affiliate would get us there.

But I am often asked why facilities-based and why broadband. And if I may take just a minute, why facilities-based? Because, first, we wish to control and manage and offer the newest and best technology to our customers that we possibly can rather than always just be dependent upon the resale of our competitors’ technology to the marketplace.

Second, we would like to have access to the market directly rather than always go through our competitors for access. Third, we would like to control our costs, not resell our competitors’ costs, so we can have lower prices and a fair return. Those are the three reasons.

Second, why go broadband? I mean, there are a lot of ways to go. Why couldn’t you just do more narrowband? And a couple of fundamentals. One is that it is technology-driven. Many of us in the computer industry and electronics and semi-conductors understand Moore’s law, which is a doubling in price performance very 18 months.

The world of communications is going faster than Moore’s law today. The world of fiber and photonics, the world of glass strands with light waves going over them, is, in fact, going at 2 to 3 times the pace of technology of Moore’s law.

Just maybe a “gee whiz” or two to remember. We are laying in this world some 2,800 miles of fiber an hour; everyday, we go around the world twice. In fact, if you look just to what AT&T is doing in terms of its deployment of fiber and photonics, every 2 months we double the capacity of our public switch network. And so it is that technology drive that makes band width the future of the communications industry, broadband width.

The second, of course, is as we get more band width, applications expand. It is the same phenomenon that happened in the computer industry with the microprocessor and Moore’s law. And I can remember for 31 years in the IBM Company always worrying about what was everybody going to do with this wonderful computing power that we are going to put out there. And everybody found out a lot more to do and the market expanded. The same thing is happening with band width.

Just look at the Internet. In many areas, the Internet every 100 days is doubling in its volume, consuming that kind of capacity.

And if I might summarize it, being an old salesman I brought two charts.

This gentleman is what AT&T's \$140 billion is all about, to provide universal broadband service from any source of information, voice, video and data. It is all coming together in the world of the digital revolution, and it is coming from any source of residence, be it an internet, an extranet, an internet or a headend from a cable company.

And it is going to go over a variety, as you are going to hear, of broadband resources, not just fiber coax cable, but satellites and DSL and fixed wireless, and mobile wireless as well, and the devices are now all converging and coming together. This mobile device will become probably the most ubiquitous Internet device in the world, and these devices will all converge to have the same function and feature over time, and they will serve anybody, anywhere in the world.

What is in it for the consumer has got to be something we address. Today, in Fremont, CA, we are rolling out telephony over cable. We are offering, at lower prices, higher feature, more function, a phone for mom, a phone for dad, a phone for the kids, a phone for the fax, a phone with the computer, with distinctive rings, at only \$5 a line. We are offering going from analog to digital services in terms of the television video services. So 100 analog channels is going to become 1,000 digital interactive channels. And, of course, the Internet is going to explode and a whole new array of technologies is going to come.

Maybe as important as anything is that everybody in America has the opportunity to take advantage of and enjoy this explosion of technology, and has the availability of this band width. And I am delighted to share with you that AT&T has made a series of announcements, maybe culminating in today's, that wherever we are in terms of serving our broadband digital services, we will, at our expense, connect every school and library.

We will, at our expense, provide service where service is not provided, and we announced yesterday with the NAACP, the Urban League and the California educational institutions a training program to go into the inner cities and train the teachers, train the families, and train the untrained, because I think we have to be as much concerned and interested in what is happening as to who it is happening to and make sure this is inclusive of all of our society.

Thank you.

The CHAIRMAN. Thank you, Mr. Armstrong.

[The prepared statement of Mr. Armstrong follows:]

PREPARED STATEMENT OF C. MICHAEL ARMSTRONG

Mr. Chairman and Members of the Committee, I'm pleased to have this opportunity today to testify about broadband technology and the communications revolution that it will bring to American consumers. It is a revolution that promises to transform the way we communicate, entertain, inform and educate ourselves. It will provide the foundation for a whole new generation of communications, information and entertainment services.

AT&T intends to play its part in these changes. It's what our cable mergers and acquisitions have been all about. Last year, I testified about our plans to purchase TCI, which we closed in March 1999. I'm delighted to tell you that we have already begun to deliver on our commitment to bring choice—and a better deal—to residen-

tial local telephone consumers through TCI's cable plant. In Fremont, California, we are now offering cable lines for telephony: one for Mom, one for Dad, one for the kids, one for the fax or PC. Each line with its own distinctive ring, and for only \$11.00 per line for the first line and \$5.00 per line for each additional line, compared to the \$11.25 per month Southwest Bell currently charges in California for each and every line a customer buys. And, we're on target to bring our cable telephony offer to consumers in Salt Lake City, Detroit, Pittsburgh and other cities within the year.

As we implement our plans, consumers will see big changes. Let me bring them home—to your home and mine. Start with the capabilities digital cable will provide your family. The cable box on your TV will not only deliver hundreds of channels and movies—it will be a virtual communications center. When you come home, you'll turn on the TV, the PC or telephone—which one is up to you—to retrieve your e-mail, voice messages or fax. If you want to get onto the Internet, the cable box will give you access at speeds a hundred times faster than 28 kbps modems. You'll always be online: no need to dial up and wait for your computer to connect. That same cable line that brings TV and the Internet into your home will give you multiple telephone lines. And, customers will get all this at lower prices for telephone and Internet services than they pay today. That's what competition delivers.

With our rollouts to customers in TCI territories underway, AT&T recently announced its agreement to purchase the MediaOne cable systems for \$58 billion dollars in cash and AT&T stock. Our merger with MediaOne—just like our earlier acquisition of TCI—will mean that far more American consumers will have a choice in local phone service and the opportunity to enjoy high speed Internet services. With MediaOne, AT&T will gain immediate access—and the ability to provide competitive, facilities-based local exchange services—to millions of consumers in service areas where we currently have no facilities. Together, MediaOne and AT&T will bring video, voice and data services to these communities more quickly than we could separately.

With over \$100 billion in acquisitions to bring this communications revolution to American families, we've demonstrated that AT&T is willing to make the investments necessary to compete in the local services market. But, even with this downpayment, there is still a lot of work to do.

AT&T's combination with MediaOne will give us owned and operated systems passing about 26 million homes in 18 of the nation's top 20 markets. That's about 26 percent of American homes. While we are hopeful this will give us a base from which to negotiate joint ventures with other cable companies to reach more of our customers—who reside in every neighborhood across America—we do not have the reach of our telephony competitors.

The MediaOne merger will give us some of the scale we need to compete with the larger and more powerful local exchange company monopolies. But, from the outset, the pending Bell mergers will create combined companies that *already serve* far greater numbers of customers than AT&T has the *potential* to serve with our cable telephony plant. While we begin with virtually no share of the local market and the *opportunity* to win customers, SBC/PacBell/Ameritech will begin operations serving every customer within its territory, about 40 percent of the total U.S. population (or one-third of all U.S. access lines). Similarly, Bell Atlantic/GTE will start with a customer base of about 35 percent of all U.S. access lines.

As the FCC reviews AT&T's merger with MediaOne, we will ask them to consider these facts and the role cable is playing in local service competition. The opportunity is now ripe for the FCC to harmonize the now-outdated and suspended horizontal ownership limitations with the goals of the 1996 Telecom Act. Simply put, limiting the scope of AT&T's cable coverage would limit the growth of competition in the local telephony market.

Of course, the FCC will also look to the original purpose of the ownership rules: to prevent abuses in the control of video programming by cable companies. The suspended rules pre-date the era of digital television and the explosive growth in programming capacity that goes with it. Similarly, they do not reflect the now ubiquitous scope of direct broadcasting satellite ("DBS") firms, or the role DBS firms will play in the programming market as their competitive position is bolstered by the passage of the pending Satellite Home Viewer Act. If enacted, DBS firms, for the first time, will have the opportunity to offer video and local broadcast packages on par with cable programming that will inevitably expand their subscribership. The substantial increase in the number of programming outlets created by these technological and market changes inevitably will diminish any potential for monopsony power over programming by cable systems.

Let me also make clear that AT&T is not primarily in the content business. We're in the communications business. We're distributors. So we want to encourage as

much content as possible. That's why AT&T structured its broadband architecture for maximum openness to content providers. Our open software platform is designed to encourage content providers, for the simple reason that the more content we can carry, the more attractive our services will be to our customers. We are not primarily interested in owning content, but in packaging other people's content to our customers in the forms they want and at attractive prices.

And that's exactly why AT&T negotiated a very pro-competitive relationship with Microsoft. Under our non-exclusive agreement with Microsoft, AT&T agreed to expand its Windows CE-based license to cover an additional 2.5 million to 5 million digital set-top devices, which will enable applications from a number of companies to deliver communications, entertainment and information services. The Microsoft set-top box software will provide an open environment for the creation of services and applications. Microsoft is required by our contract to disclose all Application Programming Interfaces ("API's") that it or any other firm uses in the software. This means that any firm will have the technical ability to create services and applications that work with the Microsoft software and that Microsoft will not have any advantage through the use of undisclosed API's.

AT&T made no commitment to deploy the Microsoft set-top box software that it licensed, except in three showcase cities. In the third showcase city, Microsoft is obligated to work with AT&T to deploy Microsoft set-top box software together with a third party's server software. We'll also buy hardware and software from multiple vendors. In fact, we have already signed agreements with Sun Microsystems and Sony for use of their software products in digital set-top boxes.

As an endorsement of our broadband strategy, Microsoft has also made a \$5 billion passive investment in AT&T, amounting to approximately a 3 percent equity stake in the company. There are no board seats or other dependencies involved in the arrangement. The investment in AT&T by Microsoft will be used to accelerate the upgrade of AT&T's cable networks. That means quicker delivery of the competitive local telephone service, digital television, and high-speed Internet access we've promised to customers.

Now, I can't leave the question of open systems without mentioning the issue of cable unbundling—particularly since I know some of you have been considering this issue. Contrary to some of the rhetoric, our cable networks are not "closed". Our customers enjoy open systems in terms of content. Our broadband Internet customers can access any non-proprietary site, portal, or online service on the Internet with one click of the mouse at higher speed and with better quality than they could before.

We also will continue to meet our customers' demands for whatever content they want to reach on the Net, in partnership with Excite@Home, RoadRunner or others. But we will make these arrangements on the basis of sound commercial relationships. These commercial relationships will recognize the economic, contractual and technical realities that are part of doing business.

And, while we will ensure that our customers will have the access to the programs they want to see, we will also make sure that they have the control over the programs they don't want to see and the information they choose to keep private. This includes giving parents the tools they need to protect their children from objectionable content in their homes. And, it also means keeping personal information private through systems with adequate safeguards and privacy practices that give consumers confidence.

In the end, as I see it, there is no basis for government intervention in any of these areas: the market should make the choice, competition should spur development and customers will determine what they want.

Already the market is proving this right. Since AT&T unveiled its investment in TCI, deployment of multiple broadband pipes and all types of advanced broadband services has skyrocketed. The appearance of cable modem competition has begun to make the phone companies get serious about broadband capacity of their own. Look at the way the Bells and GTE have responded. They have had the capability to deploy digital subscriber line ("DSL") technology, which offers broadband over ordinary telephone lines, for a decade. But they only began to deploy it and lower their prices in response to the emerging competition from AT&T. In fact, they're deploying broadband capabilities throughout their territories far more quickly than anyone anticipated even a year ago. From ground-zero just a year ago, Bell and GTE will convert about 31 million of their existing copper loops to DSL-capable loops by the end of 1999. This will grow to 94 million lines within the Bell companies' and GTE's territories by 2002. There's nothing like the sight of a determined competitor on the horizon to make dyed-in-the wool monopolists get religion about serving customers with new technology.

And, while the deployment of these new technologies hold great promise, we all must ensure that all Americans are part of this bright future. We cannot allow any American to be left behind. As AT&T deploys its all-distance, broadband service through its cable properties, we will do so in every neighborhood—urban, suburban or rural—served by our cable systems. And, there is evidence already that broadband service deployment is not and will not be limited to major cities. Smaller independent telephone companies serving rural areas are entering the race. Home Telephone Company, based in Jacob, Illinois, has introduced its Supernet service providing Internet access and speeds up to 50 times faster than 28.8 kbps modems. Buckland Telephone, serving 2,000 access lines throughout three counties in Ohio, has begun to roll out its DSL service, starting with Wapakoneta, Ohio. Panhandle Telephone in Oklahoma is also deploying ADSL in approximately 11 areas throughout its service territory. HunTel Systems, based in Blair, Nebraska, has plans to introduce DSL service to Washington County, Nebraska early next year. DSL access is also being offered in Harrison, Arkansas; Sergeants Bluff, Iowa; Winthrop, Maine; and Kamas, Utah.

AOL, which today serves about 60 percent of Internet subscribers, has also stepped up its efforts to use DSL to deliver new broadband services. By the fall of this year, as a result of its deals with Bell Atlantic and SBC, AOL will have a broadband AOL offer available across 50 percent of its customer base in 21 states. AOL also recently announced a series of agreements with DirecTV, Hughes Network Systems, Phillips Electronics and Network Computer, to develop a broadband “AOL-TV” offer that will make AOL accessible through the television. Similarly, MindSpring, another large ISP, has made a DSL deal with BellSouth and Prodigy has teamed up with Bell Atlantic to offer their customers high speed DSL Internet access.

Satellite and wireless firms are also bringing more broadband pipes to homes and businesses. Hughes is investing \$1.4 billion in Spaceway, a two-way satellite broadband service it plans to deploy by 2002. AOL has also agreed to invest \$1.5 billion to help fund Hughes’ plan to offer Internet access via its satellite systems and it will market AOL broadband service nationwide via Hughes DirecPC service by early 2000. And, Teligent and Winstar are deploying broadband access using wireless networks in markets across the country.

Congress well understood the powerful relationship between competition and innovation when it passed the Telecommunications Act of 1996. It understood that innovation needs the spur of a competitive market. That’s why Congress mandated that the market for local telephone service be opened to competition. And, that’s also why Congress decided to treat new entrants and cable facilities differently than the incumbent Bells. Congress was counting on cable as a second wire to the home to give consumers a choice in local phone service and to deliver the advanced services you expect in a competitive market. AT&T’s cable purchases are designed to do just that. And, now, in response to AT&T’s investment and innovation, other companies are building a variety of other broadband paths to homes and businesses across the country.

But I don’t mean to imply that all you have to do is stand back—and let the future unfold. I can’t think of a single revolution in history that worked that way.

AT&T has demonstrated its willingness to compete in the local service market, but our cable systems will never reach every one of the 100 million households in America or every one of the 61 million AT&T long distance families we serve. Today, to offer local service in the majority of communities, we will need to rent the local telephone companies’ wires if they are economically and operationally viable. And even where we do own and operate cable systems, we will need the local telephone company’s cooperation in switching customers from their network to ours.

That’s what the Telecommunications Act of 1996 was all about.

Congress recognized that it wouldn’t be easy to cajole the Bell companies to give up a regulated revenue stream they’d had for almost a century. So it included an inducement for the Bells to cooperate. It established the quid pro quo that the Bells could get into the long distance market once real competition is established in the local services market.

Why hasn’t this happened yet? For one thing, we all under-estimated the practical difficulties of opening up such a huge, technically complex market to competition. And for another, too much time and energy were consumed in litigation after the Act was passed. That litigation seems to have ran its course, and the Telecom Act is still intact. More important, I hope that some of the Bell companies now recognize not only the inevitability of local competition but its desirability as well.

From the consumer’s perspective, the desirability of local competition is obvious. The faster the flywheel of competition and technology spins, the more consumers have to show for it. Local competition will stimulate new investment and new serv-

ices. Consumers will get the classic benefits of a competitive market—more choice, lower prices and better value.

These benefits are close at hand. But close isn't good enough. To finish the job, the FCC must re-establish the obligation of the Bell companies to provide all of the unbundled network elements ("UNE's"), individually and in combination, and including DSL-capable loops.

Second, the obligations on the Bell companies under the Act to price unbundled network elements and access based on cost must be diligently applied and vigorously enforced. If the Bell companies agree to economically viable rates in setting their wholesale prices for network elements and establish operational systems to implement them, you can count on AT&T to buy capacity on their networks to offer local service. That will be the fastest route to bringing a competitive choice to millions of consumers. But I can also promise you that AT&T will not show up in any community where the Bell's wholesale prices are too high or the operational systems endanger a customer's service.

We've been down that road before. In the rush to get into the market after the Telecom Act was passed, AT&T in 1997 resold the Bell companies' service in a number of states. The wholesale prices were so high, we lost money on every customer—\$3 billion in all. The more customers we won, the more money we lost. You don't need an MBA to know that's no way to do business. And we won't.

We learned something else in that experience—changing local service companies should be as easy, and as certain, as changing long distance companies. But it wasn't in 1997, and it isn't now. We learned then that our customers had to wait weeks to switch, some lost dial tone and 911 availability. Our business customers were dropped from directory services.

And that brings me to the next plank of my agenda for consumer choice. It concerns all the back-office computer systems necessary to introduce competition to a local network. These systems handle the thousands of individual tasks necessary to provide local phone service—they track orders, coordinate circuit provisioning, dispatch trucks, render bills. They are the joint responsibility of the incumbent local companies and the new local competitors, including AT&T.

With the right systems in place, customers can switch from a Bell company to another provider easily, without having service disrupted, or access to "911" cut off, and without being dropped from the telephone directory listings.

That's why metrics for system performance and consumer quality and safety should be adopted and applied. Systems should be tested against those standards by a neutral third party. And there should be a real market test before we put all the consumers of a state at risk.

Finally, consumer choice in local services requires that we take access charges down to cost. Everybody in this room pays access charges, although you won't find them on your phone bill. Local phone companies charge an average of about 4 cents per minute to complete both ends of a long distance call. Economists say the actual cost is less than a penny a minute.

Now, the local phone companies didn't invent this system. It's a holdover from the old Bell System days when long distance and business services subsidized local service. But that kind of pricing amounts to a hidden tax that costs long distance callers \$10 billion a year in unnecessary interstate access charges.

To be fair, the Bells might say their mark-up is considerably less than that and they still need the revenue to hold down the cost of local service. And we must recognize that access charges are some part cost reimbursement and a large part pure profit to the local company—a holdover from another era.

My purpose is not to continue this argument here. Quite the opposite. I want to see it ended once and for all. We need a comprehensive restructuring of access charges that eliminates all the subsidies once and for all, giving American consumers a multi-billion dollar tax cut.

Let me sum up: AT&T's merger with MediaOne will offer more customers more choice for local telephony service and new broadband services at lower prices and faster speeds. Through cable, we will offer residential customers the first real alternative to the incumbent monopolies. Already our entry on the horizon has sparked competitive responses in the delivery of new broadband services from the Bells, GTE, Internet Service Providers, and others.

But, while we are making tremendous strides in the deployment of broadband across all of America, we have a long way to go to break open the local services telephony monopoly of the incumbent local exchange companies. The Bells and GTE provide local exchange service to 97 percent of the customers in their territories. They have litigated all the way to the Supreme Court to avoid complying with the Telecom Act. And, although that litigation seems to have run its course, the Bells and GTE now are asking Congress to reward their recalcitrance by making excep-

tions in the Act. Following that path will leave consumers out in the cold as the incumbents lose all incentive to comply with the Act.

My message is simple: Stay the course. Let's get on with enforcement of the Act, and finish the business that finally will bring American consumers the fruits of your labor. We'll all know when we've achieved success:

- Consumers will have a choice of local companies.
- Consumers will have a choice of local services.
- Consumers will have a choice of local prices.
- And they will be able to switch local companies and services as quickly as they can switch long distance companies and services.

The communications revolution is coming, driven forward by the forces of competition and technology. The only question now is whether decision-makers, both public and private, will speed the process along. Thank you.

The CHAIRMAN. Mr. Seidenberg.

STATEMENT OF IVAN G. SEIDENBERG

Mr. SEIDENBERG. Mr. Chairman, Members of the Committee, thank you very much for the opportunity to be here this morning and offer Bell Atlantic's opinions and viewpoints on some of these issues.

As you stated earlier, the Internet has been the engine driving our economy for the past few years in our industry. The current network infrastructure that we serve is delivering an amazing amount of service over that network. But customers, as you have said, want more. They want more speed, more quality; they want more services, they want more choices.

We think that public policy ought to be driving more investment in these areas. This investment in infrastructure, or the lack of it, will have real impacts on customers. And even today, some are being denied the full benefits the Internet can offer. We need infrastructure investment in two primary areas—the backbone network that connects all parts of the country, and the first mile from the home. Let me address these quickly.

The biggest barrier to growth and investment in the new Internet technologies is that companies trying to provide services are regulated differently. First, let me talk about the backbone network. Here, the regulatory obstacle is the FCC's interpretation of the long-distance restriction in the 1996 Telecom Act. The backbone is a nationwide network of high-speed facilities. It is similar to our long-haul airline routes. So it is with the Internet. The long-haul routes are not enough. We need a system of regional airports, or regional Internet facilities that gather traffic and deliver it to the major hubs.

In Bell Atlantic's service territory, there are many areas without a backbone hub. This prevents users from getting high-quality direct connections to the Internet. Bell Atlantic States are divided into what we call 39 LATA's and independent telephone company areas. Of that number, 17 have no backbone hub today. Amazingly, places like Atlantic City, NJ, or Binghamton, NY; Scranton, PA; and Burlington, VT have no backbone hub.

Bell Atlantic should be allowed to play a bigger part in development of this new Internet phenomenon. We are already providing local data services to customers in these areas, to auto dealers, hospitals, students, and the like. And we have the ability and the financial resources, of course, to provide them with better connections to the nationwide network. We urge the Congress—we urge

you to lift the barriers and create the big rules that prevent us from doing so.

The second area that is going in the wrong direction is the disparate treatment of providers in the first mile. We now have the technology, called DSL, to turn the wire to your home into a high-speed pipe. But instead of providing incentives to deploy this new technology, regulators are making it more costly to do so.

Right now, regulators are considering additional restrictions on Bell Atlantic's high-speed services. Here are a few examples: new network unbundling requirements, including what they call spectrum unbundling; heavily discounted wholesale prices to the point where we can't even get a return on the investment we make in the network; rules requiring a separate subsidiary for high-speed services; and limits on the way we can package and market. At best, talk of more regulation creates uncertainty. At worst, it destroys the business case for investing in new technology for the first mile. These rules are unnecessary. They should certainly not be imposed on Bell Atlantic, when my competitors operate without this regulation.

The Internet's strength is its heritage of openness and individual control. But AT&T and cable are telling consumers, if you want our high-speed transport, you have to buy our ISP as well. We have been down that path before with the cable industry. After the 1984 Cable Act, some cable, some cable companies started locking up all the video programming, the content. It took a law, the 1992 Cable Act, and three antitrust consent decrees to open the system and give DBS access to programming so it could compete with the cable industry.

Now, you and the Congress have a chance to get it right from the start. Repeat your success by adopting now the open access policies of the 1992 Cable Act. I know that you and other Members of Congress know how to successfully deal with new telecommunications technology, how to encourage investment and promote competition. You have done it before in the world of wireless, and you can repeat your success in the world of data.

From 1993, when Congress passed deregulatory provisions for cellular service, to 1998, the number of wireless telephone users jumped from 16 million to nearly 70 million. At the same time, the average monthly bill dropped nearly 50 percent. And when Congress dropped the long-distance restriction on wireless services, most cellular companies responded by offering plans with no long-distance charges tacked on to the per-minute of air time.

So we urge you to repeat your success and apply the same successful policy of deregulation to new Internet data services. Congress can and should ensure that all competitors entering the Internet marketplace are treated equally.

Thank you.

The CHAIRMAN. Thank you.

[The prepared statement of Mr. Seidenberg follows:]

PREPARED STATEMENT OF IVAN G. SEIDENBERG

Good morning, Mr. Chairman and members of the Committee. My name is Ivan Seidenberg, and I am the CEO of Bell Atlantic Corporation.

Thank you for the opportunity to discuss what is probably the most exciting development in the telecommunications industry in years. That development is the as-

tounding growth of the Internet—a telecommunications medium that has already changed the way millions of Americans live. And what is even more exciting is that this is only the beginning—the changes that will come in the next five years will dwarf those we have seen in the last five.

The Internet is a wonderful tool that has developed far faster than anyone could have imagined. But its continued development and evolution into a technology that can handle any form of communication and any type of service from educational to medical may not keep pace, with significant consequences for some segments of the country.

When I look back just five years ago, when the World Wide Web really began to take off, I am amazed at what has been accomplished. But the plain truth is we have an Internet infrastructure today that is nearly tapped out. Yes, there is investment going into the Internet backbone. Yes, local broadband connections are beginning to roll out. But given the speed of Internet time, we have to unleash all our strengths—and free all sectors of the Internet industry—to build out broadband networks, put in place more backbone facilities, and build the crucial hubs and connection points for the backbone that are lacking in many parts of the country. We simply can't afford to have some companies that build infrastructure—like the Bell companies—sitting on the sidelines.

CONTINUED ECONOMIC GROWTH IS AT RISK

The Internet and the information industry have been crucial components of the amazing growth we have had in our economy. But we may be getting complacent. We may all be starting to believe that this growth is inevitable and that nothing will slow it down.

It would not be wise to tip toe around and hope that the economy will simply continue on its upward path. The information industry—which includes hardware and software and the facilities that connect them—is crucial to this economy not just because we all bought computers, cell phones and Palm Pilots. It is crucial because it networked these devices together through the Internet, creating an almost seamless communications fabric that created a powerful engine of innovation and efficiency the likes of which the world has never seen. This has increased productivity in many segments of the economy, from agriculture to manufacturing.

To keep this growth curve moving rapidly upward, we need to have an Internet and communications infrastructure that can do more, do it more quickly and do it more reliably. We need to act now to get this infrastructure in place, and we need it as rapidly as possible. We can't let an infrastructure that is already showing signs of strain begin to affect our economy and its health. We can't leave out the many parts of the country that are far away from the backbone or have no close-by high-speed hubs. We would be far better off setting the stage now for an infrastructure that can grow with the economy and stimulate even more innovation and efficiency. That is the way to lead the country towards an even more prosperous future.

THE STATE OF THE INDUSTRY

A few short years ago, the Internet was something that only serious researchers and computer jockeys knew about. Electronic commerce was not part of our vocabulary. In 1995, revenues generated by the Internet were a mere \$5 billion. Since then, the growth of the Internet has been astounding, far outstripping the predictions of most experts. Last year, Internet revenues rose to an astronomical \$301 billion.

With this growth, there has been increasing demand for bandwidth and speed. The modems that were state-of-the-art a few short years ago are the slowpokes. As more and more people use the Internet and more complex information and bandwidth-intensive applications appear, it is clear that even current speeds are not fast enough.

Consumer surveys demonstrate that speed is very important to users. But so are quality and capability. The Internet's problems are only partly related to the need for more capacity. It is an end-to-end system based on hundreds of connections between different networks. If a consumer's data—a web page being transmitted to a person's home for example—is slowed at any point in the transmission, data can be lost, the connection may drop and some of the more exciting applications for education and telemedicine involving video, for example, will simply be impossible.

The Backbone. At the top of this system is the Internet backbone—high-speed facilities which take traffic back and forth at high speeds across the U.S. The faster data can get onto the backbone and the more backbone capacity there is, the better the connection and the higher the quality of the data transmitted.

The Internet's structure is like the airline system. National and international airports are located in major cities and population centers of the country. Major air carriers connect these airports together and planes fly at rapid speed back and forth across the country into and out of these airports. Thousands of smaller airports are "connected" to these major "hubs" taking passengers from the larger airports out to smaller towns and cities throughout the states.

In the case of the airlines, if you have no major airport close to you, it may be very difficult, slow or expensive for you to get a flight to other parts of the country. The farther you are away from the airport, the more difficulty and expense you may have. The same is true of the backbone. Only so many backbone facilities exist and most of the hubs or connection points for the backbone are located in a relatively few areas. Areas without hubs become backwaters—the airplanes flying over head with no place to land does not do a waiting customer much good.

There are vast areas of the U.S. that simply have no nearby backbone connections or hubs. The three largest backbone carriers—MCI/WorldCom, Sprint and Cable and Wireless with AT&T coming up fast—have little incentive to connect their systems with smaller carriers or locate hubs away from major urban centers. And the level of concentration is increasing rapidly as the major backbones acquire or displace smaller players. Even where backbone exists, such as in major urban centers, it is often congested. Many Internet providers have no way to get their data traffic to the backbone efficiently and without numerous back-ups and delays. Many are simply located too far away from convenient backbone connections. And when they do get to the backbone, they find that the lack of adequate capacity slows their customers' service.

The Last Mile. Today, most consumers get to the Internet over "narrowband" technology—their ordinary telephone lines. Although speeds have increased significantly in recent years, they are nowhere near fast enough to support the applications of tomorrow. The two most promising landline technologies to provide residential consumers with high-speed broadband Internet access at a reasonable cost are Digital Subscriber Line (DSL) services and cable modem services.

TO REGULATE OR NOT TO REGULATE, THAT IS THE QUESTION

We should not apply traditional voice telephone regulation to the Internet and broadband services. This would slow deployment of broadband, inhibit competition and risk slowing investment at the very time when we need every possible firm involved in advancing the capabilities and capacity of the Internet. The Internet has driven the growth of the high tech sector. There is a very real danger that if the Internet does not advance to a new level, one capable of providing higher speed, higher quality connections, the growth our economy has enjoyed because of the explosion of information technology could well be undermined.

The high-speed data business of today should not be regulated like the voice telephone network of yesterday. In most urban areas, there are several companies vying for the high-speed data business. Cable companies are upgrading systems to be Internet-capable with high-speed cable modems. New entrants, such as Covad, Northpoint, and Rhythms NetConnections, provide DSL services to business and residential consumers. And unlike the voice markets, local telephone companies are not the dominant providers of residential high-speed data services—cable companies are. They already serve more than 80 percent of the residential customers buying high speed Internet access. The old policies just don't make sense here.

Bell Atlantic and the other Bell companies are prohibited from carrying data traffic across LATA boundaries. That means that a Bell Atlantic customer must rely on other providers to reach the Internet. It also means that Bell Atlantic cannot invest in Internet backbone services.

To provide customers reliable end-to-end data services, a provider must be able to move data from one end of the country to the other, and overseas. Sprint, MCI and AT&T all have this capability today. Cable companies and the nascent data-only carriers are not prohibited from providing these services. The only companies not allowed to provide this service are the Bells.

There is no justification for the FCC's protection of AT&T and MCI from Bell Atlantic's full entry into the data business. These mammoth companies have the capital and know-how to compete for data customers. Even the start-up data carriers are in an excellent financial position. These companies have been the darlings of Wall Street, in spite of the fact that most of these companies have only started to build their customer base. NorthPoint Communications has a market capitalization of \$4.5 billion, in spite of the fact that its revenues in 1998 were less than \$1 million. Covad's market capitalization is \$3.1 billion, with 1998 sales at \$5.3 million.

Rhythms NetConnections market capitalization is nearly \$4 billion, on 1998 sales of \$500,000.

There are other existing regulations that handicap Bell Atlantic's provision of DSL. The FCC is busy working on applying Section 251 unbundling and resale requirements to Bell Atlantic and other incumbent LEC's. Bell Atlantic is committed to providing unbundled DSL-compatible loops to competitors. Any other unbundling of the DSL service or the provision of DSL-capable loops is unnecessary and can harm deployment of DSL.

The FCC is currently considering a proposal to require spectrum unbundling, also called line sharing. Under this proposal a competitor would be allowed to use a portion of the capacity of the loop essentially for free to provide DSL service, and the incumbent LEC would still be required to provide the underlying basic telephone service and cover the full cost of the loop. To split the capacity of the loop, however, is bad public policy. Line sharing deters the development of competition for local voice services by "stranding" voice and discouraging competition for voice services. Line sharing discourages competitive investment in local voice services by giving the new data-only competitors a "free ride" on the incumbent's voice service, which is priced below cost. Competing carriers do not need to share the unbundled loop to offer advanced services. They are already free to offer advanced services over an unbundled loop or to invest in other technologies, such as wireless technologies. Like the ILEC, they can recover the cost of the unbundled loop by offering voice and other services over that unbundled loop.

The FCC is also in the midst of determining whether our DSL services should be subject to the resale discounts provided under Section 251. Bell Atlantic has filed a tariff at the FCC to provide DSL service on a wholesale basis to ISP's such as AOL and to competing carriers. CLEC's claim that ISP's are the end-users of that service, and therefore CLEC's should be able to obtain an additional discount from the wholesale tariff price.

With the proper deregulation in place, DSL deployment will increase significantly. A rising tide will raise all ships, as the standard speed for Internet access increases by a factor of 10 or 100, every high-speed data provider will benefit. Deregulation often provides consumer benefits in deployment, prices, and choices.

The cellular experience

There are parallels between what happened in the cellular industry and what is happening in the high-speed data marketplace. The slow roll out of cellular service, and continuing regulation of the service cost consumers and the economy billions of dollars. Significant deregulation, however, has increased subscribership and lowered consumer costs.

It took 15 years from the time that the FCC began its first inquiry to the first commercial cellular service. Even then, no one predicted the fantastic growth of cellular. In fact, at the time of the breakup of the Bell System, it was unclear as to whether AT&T or the Baby Bells would inherit AT&T's cellular spectrum licenses. AT&T had predicted that cellular subscription levels would reach one million by 1999. In reality, cellular subscribership reached that level in 1987, and at the end of 1998, there were more than 69 million wireless subscribers in the U.S.

Deregulation speeded wireless growth. First, the FCC made an effort to lessen regulation of cellular service in 1988. In December 1988, the average monthly cellular bill was \$98.02 for the two million plus subscribers. Within four years of the FCC's deregulatory effort, cellular subscribership reached 11 million, while the subscriber's average monthly bill dropped by nearly 30 percent.

The second major deregulatory effort was undertaken by Congress in 1993 in the Omnibus Budget Reconciliation Act. From 1993 to 1998, wireless telephone subscribership rose from 16 million to 69 million, while the average monthly bill has dropped by nearly 50 percent.

Some states were allowed to continue to regulate cellular service. A Cellular Telephone Industry Association study showed that cellular prices in regulated states averaged 17 percent higher than the prices in unregulated states. It also found that cellular penetration and cellular growth was lower in regulated states than in unregulated states.

The inescapable conclusion is that the cellular industry benefited greatly from deregulation. In a deregulated environment, subscribership rose and prices dropped.

The high-speed Internet market is like the cellular industry 15 years ago. Fewer than 1 million American Internet users have access via high-speed cable modem, and a scant 70,000 use DSL technology. Adoption of deregulatory measures will permit telephone companies to provide DSL technologies at a more rapid pace, hopefully with the same results as deregulation of the cellular industry: more consumers accessing the technology for lower costs.

GIVE THE CONSUMER A CHOICE

The Internet's foundation and its strength is its heritage of openness and individual control. This heritage grew out of a commitment to an agreed set of protocols—ground rules for how the Internet is supposed to operate—that were developed openly and without government direction. Government established the framework—and then it got out of the way.

As we build a new high speed Internet, its heritage of openness and individual control should not be forgotten. We should ensure that the new broadband networks are as open as the Internet itself has been. Otherwise, we will begin to erode the strength of the Internet and to undermine what is its core—connectedness. Connecting people, businesses, schools, web developers and content makers together and creating an open, vibrant market place of ideas and commerce.

However, some providers have adopted policies that are inconsistent with these principles. AT&T, the dominant provider of high speed Internet access, has a closed system, in which a consumer using AT&T's cable modem service must pay for AT&T's affiliate and ISP of choice, @Home. This issue becomes more urgent as AT&T's acquires more cable properties.

Here's what AT&T/cable say to customers: "If you want my high speed transport, you have to pay for my Internet service provider too, even if you want to use some other Internet access provider."

Why does AT&T want closed systems? It's pure and simple a business decision. AT&T spent \$48 billion for TCI and is willing to pay \$58 billion for MediaOne because it knows that having captive customers means more revenue per customer. By freezing out other providers, AT&T can essentially control the content its customers receive. The market power of closed systems combined with access to a major percentage of the nation's households, gives AT&T the ability to assert substantial economic leverage over content providers.

AT&T apparently thinks that policymakers will let it get away with closed systems, because the new AT&T pledges to compete in the local telephone market. Even if you believe that this is what it takes to get AT&T into the local telephone market, it's a bad deal. More competition in the local voice telephone business is a poor trade for an unregulated monopoly in the Internet.

This is not a call to bring the heavy hand of regulation down on cable. We can ensure that networks are open without extensive regulation. What I am suggesting is a simple mandate that requires cable networks to allow consumers a real choice in their Internet provider. The terms, conditions, and technical aspects of how this is done should be left to the marketplace.

Congress should establish a simple policy of non-discrimination for cable networks, to allow consumers a real choice in their Internet provider. I believe that by setting this simple ground rule, we are extending the Internet's core strengths into the new broadband arena. If we at the same time free the Bell companies from the LATA boundary restrictions in carrying Internet data traffic and remove price regulation from telephone broadband services to the home, we will free all of the companies who have helped build the Internet—from ISP's to the local telcos to the cable companies—to invest in and more rapidly build out the broadband networks we need now. We will put them all on a more level playing field and encourage more competition.

Congress has had to step in before to require cable companies to "open up." Direct broadcast satellite ("DBS") technology offered a alternative to cable. However, by the early 1990's, the cable industry had sewn up most of the video programming content, and it wouldn't let the program providers sell their content to DBS. It took a change in the law, through the 1992 Cable Act, to allow DBS to have an opportunity to offer some of these programs. Given access to programming, DBS has provided a real alternative to cable and has provided service in rural areas that cable hasn't tried to serve.

CONGRESS SHOULD SET THE OPEN COMPETITION POLICY

As it did for wireless services, Congress must make the FCC recognize that the high-speed data business is different from the voice telephony business and that it just not be subjected to voice telephony rules. The policy that will most benefit the consumer and the Internet is an open competition policy—one that applies equally to all providers, regardless of their parentage. Congress should adopt a policy that permits all data service providers to provide Internet backbone services. Congress should encourage last mile broadband deployment. Finally, Congress should ensure that regulation is only instituted where there is a clear market failure.

Overlaying existing telephony regulation to the Internet is not the answer. Bell Atlantic urges Congress to adopt legislation that deregulates the provision of these services and does not favor one provider over another.

The CHAIRMAN. Mr. Mandl.

STATEMENT OF ALEX J. MANDL

Mr. MANDL. Thank you, Mr. Chairman and Members of the Committee. Thank you for the opportunity to tell you about Teligent and what role it plays in the new broadband environment.

I am Alex Mandl, and I am Chairman and CEO of Teligent. Some 3 years ago, when I left AT&T, I did so with some very specific ideas in mind. In fact, the thing we saw nearly 3 years ago was this. The data explosion that has been referred to was obvious even back then, and it was also clear that this data growth and this data explosion would be delivered to consumers over networks that consist of two components, one component being the long-distance, the backbone component, and the other being the local service, the last-mile component.

It was also clear even back then, 2½ years ago, that on the backbone side there is a fair amount of competition. All the existing carriers, as we know—AT&T, Spring, WorldCom, and others. And, in fact, there are a lot of new carriers being planned, being developed, rolling out their services. Names like Qwest, Level 3, Williams, and other companies are putting a lot of fiber into the ground to deal with this backbone need, this backbone capacity requirement for this data explosion. And Mike, I think, outlined that very graphically.

The second part of the delivery system, the local network, is a little different. A high percentage—some debate around 90 percent, 95 percent—is still being delivered over one network, the copper network provided by the LEC's. And that to a large degree is still the narrowband network that we all know about. Obviously, people are working on expanding that and enhancing that.

I think it was also clear back then that the full potential of the Internet, as has been said just a minute ago, will not be possible until that last-mile bottleneck has been opened up, and that is where Teligent fits into the equation.

Teligent deploys a new variant of proven technology, microwave radio transmission, and we are building local broadband networks that totally bypass the existing networks, both the LEC networks as well as the cable networks. And we do so by using a certain device, the radio, and I have one with me here just to show you how small it is. It fits on the top of roofs and delivers these data screens to the customer in the building. So it is a small and a very non-obtrusive device from that point of view.

We do address the medium and small business markets. We do that because it does represent two-thirds of the business market, so it is not a niche market. And it is the fastest growing market, as well as the market that is, on average, very much underserved. And because of our unique technology, we can reach beyond just the central office buildings. We can reach the suburbs. We can reach the areas that are clearly less populated where a lot of the small and medium-size businesses, in fact, are operating.

What about Teligent today? We are headquartered in Vienna, VA. We employ today, 2½ years later, roughly 2,000, 2,300 people. We are up and running in 28 markets across the country today, providing full commercial service. And by the end of this year, we will be up and running in 40 markets, in 40 of the major markets, providing pretty much national service, a national footprint, in this broadband environment.

Customers are responding well because they see an offer that consists of 30 percent less than what they are paying today. They see a bundled offer of local, long distance and Internet access service, and they see a Web-based billing approach that is unique in terms of how they can interact with the company. So from that point of view, I think Teligent is beginning to address this last-mile bottleneck that we all know about and is such a critical component in terms of Internet development.

Now, it is very clear to us Teligent would not exist without the Telecom Act of 1996. We all know that the Act is not perfect, but it certainly set in motion an irreversible momentum in terms of providing more and more competition to those markets. And that, of course, will benefit consumers. And I am very grateful to you for having accomplished that.

In my judgment, if Congress were to reopen that Act and start debating some of the principal points of this Act, I think it would significantly slow down development of competition. I think it would create some confusion, and the whole momentum of new competitors entering those markets, like Teligent, I think would be slowed up and the consumer would not benefit from that.

There are, however, a couple of barriers that are still out there that need to be addressed. First of all, I think it is very clear that Congress and the FCC must continue to enforce the provisions of the Act and require the LEC's to fully open up the markets before they are allowed into long distance. I think unquestionably there is some progress taking place. For example, we have great dialogue with Bell Atlantic in terms of how we can work together, but there is also clear room for improvement on that front.

From a data point of view, you know, we don't see any need to differentiate that from the voice service. The new networks, including the Teligent network, really doesn't make a distinction between data and voice services. It is one bit stream, one stream of ones and zeroes that delivers both voice and data. And as we move forward, to differentiate that, I think, would be a mistake because to make such a distinction before the LEC's have fully opened up their markets would cause a couple of problems. One, I think it would clearly slow the development of new competitors in the local market. And I think, second, it would take away from the incentive for the LEC's to really fully open up their markets.

There is another barrier that we deal with and that is building access. As we deliver and as we try to bring these broadband services to office buildings, to apartments, to condominiums, we clearly experience some slowness, some sluggishness, some non-responsiveness in terms of how we get that done.

We understand that there has to be a reasonable balance struck in terms of how that is addressed. There is a balance between the legitimate property rights of the building owners. Yet, allowing

companies like Teligent to enter those markets, enter those buildings in a fairly efficient and economic way is an important dimension of it.

We applaud the leadership of Senators DeWine, Kohl and other Members of Congress that recognize that there is a need for some Federal policy in this regard. And we certainly also support the legislation introduced by Senators Stevens, Lott, Hollings and Dorgan that would encourage building owners to offer non-discriminatory access to all new competitors.

So working together with Congress and allowing competition to flourish, I think, will make this broadband environment an exciting one for all consumers, and I thank you for your kind attention.

The CHAIRMAN. Thank you.

[The prepared statement of Mr. Mandl follows:]

PREPARED STATEMENT OF ALEX J. MANDL

Mr. Chairman, Ranking Member and other Members of the Committee, thank you very much for giving me the opportunity to come here today to tell you a little about Teligent's contribution to this country's broadband future—and to describe some of the challenges we face as we work toward making that goal a reality.

My name is Alex Mandl. I am the Chairman and Chief Executive Officer of Teligent, a competitive communications company that offers local, long distance and high-speed Internet services to small and mid-sized businesses across the country. Teligent has its headquarters in Vienna, Virginia. We employ more than 2,000 people, who work in more than 50 facilities throughout the nation.

Earlier, I served as president and chief operating officer of AT&T, and as AT&T's chief financial officer. Before joining AT&T, I was chairman and chief executive officer of Sea-Land Services, Inc., the world's leading provider of ocean transport and distribution services.

Mr. Chairman, when I left AT&T to found Teligent nearly three years ago, I began with an idea.

The idea was to use a new variant on a proven technology—microwave radio transmission—to build new local communications networks across the country, broadband networks that do not rely on the existing local telephone companies and their aging narrowband infrastructure.

The goal was to build unified networks with the ability to simultaneously deliver high-speed data and Internet services, as well as traditional voice services, to small and mid-sized businesses—at significant savings to customers.

We target small and medium-sized businesses—businesses with as few as five or ten telephone lines—because they represent the engine that is driving the success of our nation's economy. Small and medium-sized businesses make up more than two-thirds of all businesses in the United States. Ironically, these businesses comprise the fastest growing but most under-served segment of the communications marketplace. Because of our unique technology, we're able to reach out beyond the central cities to the suburbs and beyond, where these smaller businesses are concentrated.

Today, Teligent is serving customers in 28 markets around the country, in states such as Ohio, Delaware, Wisconsin, New Jersey, New York and California. We plan to be up and running in 40 markets by the end of the year. Eventually, we'll have facilities in at least 34 states. I think that represents a major accomplishment for a company that launched service in its very first markets at the end of last October.

In the next three to four years, Teligent expects to spend more than \$1 billion on the construction of local broadband networks throughout this nation. Why are we making this significant investment?

Because we believe that the success of the American economy as we enter the 21st Century depends on our nation's ability to move information with more speed, efficiency and intelligence than any other country in the world. In the last five years, we have witnessed the dawn of a new age in which commerce no longer is measured in short tons—it's measured in terabits.

That's what the broadband revolution is all about—the convergence of old fashioned voice technology and new, high-speed data technology, culminating in a new system of high-capacity communications networks that don't distinguish between the two.

The advent of the Internet and e-commerce is fueling a tremendous demand for bandwidth. We're crossing over the threshold into a new world of communications—one that's been compared to the advent of electricity in terms of the revolutionary changes that will come in its wake.

Forrester Research recently predicted that the U.S. market for broadband access and Internet service is ready to—and I use their word—“explode.” Just three years ago, the entire U.S. Internet services industry amounted to about \$1.3 billion. But last year, the business segment of that market alone had grown to nearly \$4 billion. Forrester predicts that by 2003 that number will hit nearly \$60 billion.

Anecdotal experience confirms these projections. At Teligent, we're already seeing a heightened interest in data and Internet services from our base of small and mid-sized business customers. Nearly a fifth of them are ordering some type of broadband access service—a much higher percentage than we had expected. And many of our new customers are using our new, Web-based, interactive management tool called e•magineSM, an innovate product that allows customers immediate on-line access to their billing information 24-hours a day. A product such as e•magineSM simply wouldn't be possible in the old, analog world.

We think these developments foreshadow ever-greater demand for bigger and bigger information pipes. Already, more than five million businesses have created their own Internet sites. In fact, business-to-business commerce on the net is expected to blow through the \$1 trillion mark in the next five years, according to Forrester.

With all that traffic pumping through the system, businesses that rely on a traditional dial-up data connection through their *local* communications network literally will be left in the dust on the Information Superhighway.

Why do I emphasize the word “local?”

Since the federal courts broke up the AT&T long distance monopoly 15 years ago, companies like MCI and Sprint—and now Qwest, Williams and Level 3—have been building big “backbone” data pipes—analogue to the water mains in the streets—to carry high volumes of traffic across the country, across the states and across large metropolitan areas.

In fact, one recent article concluded that if all the fiber announced by U.S. operators were fully utilized, the backbone capacity of the U.S. could increase by as much as 200 times during the next 3 to 5 years.

The point was underscored just this past Sunday in a major piece in The New York Times' business section. Reporter Seth Schiesel concluded that—and I quote—“While consumers and regulators focus on the communications bottleneck in the so-called last mile of wire to homes and businesses, long-distance communications capacity—or ‘bandwidth’—* * * is fast becoming a commodity.”

That's just the point. What happens when you get to the neighborhood? At the neighborhood level, the twisted pairs of copper wire that carried analog voice traffic along the “last mile” to homes and businesses for the past 100 years simply aren't suited—or capable—of meeting the bulk of today's digital demands. Futurist George Gilder calls these lines “the copper cage.”

The highest data speed that most people can squeeze out of these copper pipes today using a conventional computer modem is roughly 56 kilobits per second. At that rate, it takes more than six hours to download the Encyclopaedia Britannica. By contrast, Teligent today can deliver customers speeds of up to 45 megabits per second.

At that speed, it takes less than 28 seconds to download that same encyclopaedia. And we expect to see dramatic improvements in that performance in the not too distant future.

But the current reality of the Information Age is that more than 95 percent of the communications customers—businesses and consumers alike—are bound by that 56 kilobit per second “copper cage.” That's the bottleneck that Teligent is trying to break—the bottleneck of copper that separates those broadband fiber “backbone” networks from the end-user.

Our approach is to build a series of wholly new local networks based primarily on a new type of high frequency, microwave radio technology. We also integrate traditional broadband wireline technology into our local communications networks. Through our local SmartWaveTM networks, Teligent offers customers independent access to technologically sophisticated, high bandwidth capabilities and services. Because Teligent does not need to dig up streets to run wires and conduits, it avoids imposing inconvenience and expense on cities and neighborhoods in which it offers services.

Microwave technology has been around for a long time. The military used it in World War II to develop radar defenses for our sailors, aviators and ground troops. MCI used it in the 1970's and early 1980's to create the very first competition in the long distance market. But until just a few years ago, the very high end of the

radio spectrum in which we and other so-called 'fixed wireless' carriers operate was virtually unusable for commercial communications applications. Now, advances in technology have turned that spectrum into a communications medium that is not only usable, but highly reliable and very cost effective. It's so cost effective, we are able to offer our customers up to a 30 percent discount off their existing pricing. We expect that these technological advances will not only continue, but accelerate.

One of the principal reasons that Teligent can pass on these savings is that we are a facilities-based company. Jargon aside, that means we are not reselling our voice and data services over existing telephone networks that were built by the big local phone companies over the last 50 years. While we don't resell the incumbent phone company's services, we do rely on them to interconnect with our network and provide the support necessary to cut over customers and complete calls that originate on the Teligent network.

To reach our fixed wireless customers, Teligent installs small antennas, often no more than a foot in diameter, on top of customer buildings. When a customer picks up a telephone, accesses the Internet or activates a videoconference, the signal travels over inside wiring to the rooftop antenna. An electronics box, usually situated near the antenna, digitizes all signals, and places them onto a data platform—we use ATM, or asynchronous transfer mode, for that purpose. The customer building antenna then relays the voice, data or video signals to a Teligent base station antenna.

The base station antenna gathers signals from a duster of surrounding customer buildings, aggregates the signals and then routes them to a Teligent broadband switching center. At the switching center, Teligent uses ATM switches and data routers along with Nortel DMS switches to hand off the traffic to other networks—the public circuit-switched voice network, the packet-switched Internet, and private data networks.

You'll note that the Teligent network makes no distinction between voice and data. All these signals are carried over the same, broadband data platform.

As we build our local networks, we are making significant investments in people, property and equipment. In this year alone we expect to spend \$300 million on capital equipment. For a company that has been in commercial operation for less than a year, I believe that investment is significant.

I've outlined Teligent's plans for delivering broadband access to local customers. But we are not the only company working on the problem. Nor is fixed broadband wireless the only technology that can get us there.

There has been much discussion lately about DSL—digital subscriber line technology. DSL in a sense is an attempt to teach a very old dog new tricks by using new electronics to enhance the speed and capacity of the old copper networks.

DSL technology has an important place in this new communications landscape. But it also has some limitations. First of all, DSL can't be installed everywhere. Lines have to be "groomed," often at considerable expense, and central offices must be "DSL-ready." Some have suggested that only about half the central offices in the country will be able to accommodate DSL equipment. DSL has distance limitations—18,000 feet is a generous estimate. There also are questions about the kind of network speeds that can be achieved in the real world—as opposed to the engineering world.

But there's an even more important point to be made about DSL limitations. No matter how you spell it, D-S-L still equals R-B-O-C. In other words, when you're dealing with DSL, you're still dealing with the RBOC networks—the copper cage. You must still lease or resell RBOC service. And we all know about the burden that exercise imposes on competitive carriers.

That's not to say that DSL doesn't have an important role to play. In fact, Teligent has found a way to secure many of the benefits of DSL technology while avoiding many of the issues usually associated with DSL deployment, including the need to co-locate facilities in LEC central offices. Just last month, we announced that we will be combining DSL technology on copper wiring inside customer buildings with Teligent's SmartWave™ fixed wireless networks outside the buildings to provide a lower cost, entry level data service for smaller companies.

Another solution, obviously, is fiber optic cable. Fiber is terrific stuff, no question about it. But fiber generally reaches only the highest density buildings, because, simply put, it costs a lot of money to dig up streets. To date, only 3 percent of the approximately 750,000 commercial office buildings in the United States are directly connected to fiber. In fairness, those buildings account for roughly one third of the 60 million or so business lines in the country. But that still means that 40 million business lines cannot get a high-speed connection via fiber, because it costs too much to reach them.

What about coaxial cable? A lot of very smart people and some very big companies are betting that cable will provide an important broadband pipe to the home. Frankly, I don't disagree. But cable passes very few businesses today, including small businesses. So that need remains to be met.

Satellite? A number of companies have some very ambitious plans. But it is not yet clear in the marketplace exactly what customers these companies win serve—and what prices they will charge.

So what's the answer? It should be dear by now that the creation of new broadband networks is not dependent on any one company or any single technology. But it is dependent on one very important condition—it's called competition—the competition that was created by the Telecommunications Act of 1996.

I mentioned a moment ago that when we started Teligent, the company was little more than an idea. But that idea didn't just strike like a bolt of lightning. That idea—and through it this company—owes its life to three major developments. We've discussed two of those phenomena—the explosion in the demand for bandwidth and dramatic improvements in radio and electronic technology. Now I'd like to spend a moment discussing the third, and most important factor—the enactment of the Telecommunications Act of 1996.

Before I proceed, I want to mention a recent development relating to one of our major shareholders, The Associated Group of Pittsburgh, Pennsylvania. As I'm sure many of you read in *The New York Times* and *The Wall Street Journal*, Liberty Media Group announced recently that it intends to acquire The Associated Group. If and when that sale is completed, Liberty Media, which is independently operated but wholly owned by AT&T, will become Teligent's single largest shareholder, with approximately 41 percent of our outstanding shares. That said, I want you to know that any of the views I am about to express regarding legislative and regulatory issues are solely those of the management of this company.

Mr. Chairman, Teligent would not exist without the Telecom Act of 1996. The Act created ground rules, agreed to by the entire industry, which accelerated local competition and opened up new opportunities. The Act enabled us to raise the capital we needed to build our business by ensuring that we would not be harmed by the historic, government-sanctioned advantages granted to the incumbent telephone companies.

Now we are finally near the end of a cycle of industry-wide litigation that has created uncertainty and delayed new competitors' ability to offer choice and new services to customers. If Congress were to reopen a debate over the key principles of the Act, it would only create more confusion and further delay the benefits of competition.

The Act is not perfect, but it has set in motion irreversible momentum toward more and more competition in our industry that, over time, will benefit all consumers. Most countries across the globe are racing to emulate the U.S. model, so their citizens and companies won't be left behind as the world moves into the information age. For that, we are very grateful to you.

But some barriers to competition remain. First and foremost, Congress and the FCC must enforce the provisions of the Act that require incumbent local telephone companies to fully open their markets to competition before they are allowed to offer long distance service. Even fully facilities-based carriers such as Teligent must have adequate interconnection with the incumbent so our respective networks can communicate seamlessly. No matter how competitive the industry becomes, prompt and seamless interconnection with the existing local networks will remain an imperative.

I have noted that Teligent draws no distinction between voice and data services because our local networks make no distinction. For us, it is all a single vibrant bitstream of ones and zeros. We believe that making any such distinction for the incumbent local telephone companies would only serve to slow the development of competitive broadband networks, especially those networks that handle local data traffic, because it would reduce the incumbent carrier's incentive to fully open local market to new competitors.

Another remaining barrier relates to the impediments that new, facilities-based competitors face in bringing broadband services to customers in apartments, condominiums and commercial office buildings in a reasonable and timely manner. The multi-tenant building market is not inconsequential—more than a quarter of all Americans live in multi-tenant buildings and an even higher percentage of businesses are located there. When consumers decide that they want to take advantage of competitive choices, it is important that they be given the ability to do so—and the ability to obtain the competitive benefits *quickly*.

In our experience, we've found that many landlords recognize the benefits that accrue to their tenants—and frankly, themselves—by providing timely access to com-

petitive communications carriers in their buildings. Competitive services make buildings more attractive to tenants—and more valuable in the real estate marketplace. We believe that a fair balance can and should be struck between the legitimate property rights of building owners—including reasonable concerns about safety and security—and the need to bring broadband services to all sectors of the economy.

We are encouraged by the decision of the National Association of Regulatory and Utility Commissioners (NARUC) to call for legislative and regulatory action to promote non-discriminatory building access. And we believe the Federal Communications Commission is taking appropriate steps to examine the issue, as outlined in its recent Notice of Proposed Rulemaking (NPRM). But legislative action is the most certain way to ensure that this issue is handled in a manner that will give more customers greater choice as quickly as possible. To that end, we applaud the leadership of Senators DeWine and Kohl and other members of Congress in recognizing the need for federal policy that will address this important issue.

By providing for reasonable and nondiscriminatory access to customers in multi-tenant buildings, Congress can ensure that building owners and competitive carriers work together to bring more rapid development and widespread availability of competitive broadband services. Similarly, securing access on reasonable terms to the wiring inside these buildings is another critical factor, a task that is further complicated when the inside wiring is controlled by the incumbent local telephone company. I believe that Congress can and should address these issues.

Working together, Congress and new carriers such as Teligent can create a new broadband world that enables open, fair competition among all competitors, no matter how big they are. And that will make a world of difference for customers and consumers.

Thank you all for your kind attention.

The CHAIRMAN. Mr. Schrader, you are next.

STATEMENT OF WILLIAM L. SCHRADER

Mr. SCHRADER. Thank you, Mr. Chairman and distinguished Senators. I am Bill Schrader. I am Chairman, Chief Executive Officer and founder of PSINet. I founded it 10 years ago. We were the first commercial Internet service provider, and we are the largest independent service provider in the world today. I am also testifying on behalf of the Commercial Internet eXchange, the largest trade association of Internet service providers in the United States which PSINet co-founded in 1991.

Since the passage of the 1996 Act, the explosion of Internet access and Internet services to American consumers and businesses has been unprecedented in the history of communications. Never before has communications technology penetrated consumer markets so quickly and offered such a rich variety of information opportunity as the Internet has since the 1996 Act.

In PSINet's experience, the key to rapid deployment of broadband service is competition in the local telecom markets. The stunning advance of the Internet in just a decade demonstrates that competition, not the deregulation of telecom monopolies, provides consumers with greater innovation, higher quality service, and more choices, all at lower prices.

It is no coincidence that the highly competitive Internet backbone market has brought the United States a level of broadband capacity that other countries envy. But the challenge for deployment of broadband service will be played out the local level, where competition is only beginning to take root.

Under current law, local telecom monopolies have a specific path to deregulation. Only if they open up their local markets can they enter interLATA voice and data markets. This balance safeguards

competition, and at the same time it provides the Bell companies with the keys to their own deregulation.

The 1996 Act ain't broke and attempts to fix it will only make broadband deployment slower, not faster. I urge you to stay the course of competition and to consider policies that will encourage building additional backbone pipelines into the home using cable, satellite and wireless technologies.

The Bell companies argue that their data service offerings should be deregulated so that they can offer DSL service at a faster pace. But the Bell companies are already deploying DSL services, spurred on by competitive pressures. Furthermore, this argument ignores the fact that competitive carriers are responsible for spurring deployment of Bell company DSL offerings.

For example, PSINet recently entered into a strategic partnership with Covad Communications Company to offer DSL services directly to our customers. As local competition grows, many more of these opportunities will be available and incumbent Bell companies will be forced to respond by rolling out their own broadband offerings more quickly and at lower prices.

The Bell companies also argue that deregulation is of critical importance to accelerating the deployment of DSL services to rural America. This argument may make a good sound bite and appeal to Senators from rural States, but it makes little sense. ADSL does not work when a customer is more than 18,000 feet from the phone company's central office, as is common in the rural areas. Furthermore, if Bell companies are so committed to rural deployment, why are they selling off significant portions of their rural exchanges?

There is reason to be skeptical of Bell company claims that if you just give us one more regulatory break, we will roll it out. This sort of compromise has been struck before and invariably the fabled services never quite materialize. In fact, other technologies such as satellite and wireless delivery systems may offer more significant potential for delivering high-capacity broadband service to high-cost areas of the country.

Some Bell companies have attempted to justify regulatory relief on the basis of a supposed backbone capacity shortage. In reality, Internet backbone capacity is increasing at an exponential rate, doubling every several months, fed by a vibrant, highly competitive market. For example, PSINet's network traverses the entire country with more than 230 points of presence, what we call PoP's, in the United States, and ours is one of several nationwide Internet backbones.

PSINet has brought high-speed backbone bandwidth to cities and towns across America, including Salt Lake City; Joplin, MO; Toledo, OH; Troy, Syracuse and Buffalo; and despite what Ivan said earlier, Binghamton, NY; Rutland, VT; Columbia, SC; Des Moines; York, Lancaster and Scranton; Dublin, OH; Mobile, Montgomery; Green Bay; Chico and Bakersfield, CA, as well as Atlantic City. These places are as important to our network as New York, Phoenix and Wilmington.

Our network is designed specifically to deliver broadband capacity in response to increasing demands by customers throughout the country. PSINet and other Internet backbone providers are doing

their part, bringing high-speed Internet access to rural, as well as urban America.

Several features of PSINet's network advance the goal of rural broadband service. For example, PSINet allows other Internet service providers to peer with PSINet—that is, to exchange traffic, much like telecommunications interconnection—with more than 100 PSINet points of presence around the country for free. These direct connections with our network, which itself carries more than 10 percent of all Internet traffic, bypass potential congestion points at public peering points and help speed data traffic significantly to the areas served by these small regional ISP's. Our free peering arrangements make it possible for rural ISP's to access PSINet's backbone quality services at numerous PoP's.

We also believe that cable providers, as they enter the Internet access arena, will bring diversity to that market, especially for consumers. We strongly believe that consumers will demand access to the ISP of their choice over cable broadband systems, and that the marketplace, not government mandates, will provide the best mechanism for ensuring that choice.

We congratulate you all for exploring these important issues and we look forward to working with the committee as it examines the issues of broadband deployment.

Thank you.

The CHAIRMAN. Thank you, Mr. Schrader.

[The prepared statement of Mr. Schrader follows:]

PREPARED STATEMENT OF WILLIAM L. SCHRADER

SUMMARY

I am Bill Schrader, Chairman and Chief Executive Officer of PSINet, the first and largest independent facilities-based Internet service provider in the United States. I am also testifying on behalf of the Commercial Internet eXchange, the largest trade association of Internet Service Providers, which PSINet co-founded in 1991.

Since the passage of the 1996 Act, the explosion of Internet access and Internet services to American consumers and businesses has been unprecedented in the history of communications. Never before has a communications technology penetrated consumer markets so quickly, and offered such a rich variety of information opportunity, as the Internet has since the 1996 Act.

In PSINet's experience, the key to rapid deployment of broadband service is competition in local telecom markets. The stunning advance of the Internet in just a decade demonstrates that competition—not the deregulation of telecom monopolies—provides consumers with greater innovation, higher quality service, and more choices—all at lower prices. It is no coincidence that the highly competitive Internet backbone market has brought the United States a level of broadband capacity that other countries envy. But the challenge for deployment of broadband service will be played out at the local level, where competition is only beginning to take root.

Under current law, local telecom monopolies have a specific path to deregulation. Only if they open up their local networks, can they enter interLATA voice and data markets. This balance safeguards competition, and at the same time, it provides the Bell Companies with the keys to their own deregulation. The 1996 Act "ain't broke"—and attempts to "fix it" will only make broadband deployment slower, not faster. I urge you to stay the course of competition, and to consider policies that will encourage building *additional* broadband pipelines into the home, using cable, satellite and wireless technologies.

The Bell companies argue that their data service offerings should be deregulated so that they can offer ADSL services at a faster pace. But the Bell companies are *already* deploying DSL services, spurred on by competitive pressures. Furthermore, this argument ignores the fact that competitive carriers are responsible for spurring deployment of Bell company DSL offerings. For example, PSINet recently entered into a strategic partnership with Covad Communications Company to offer DSL services directly to our customers. As local competition grows, many more of these

opportunities will be available, and incumbents will be forced to respond by rolling out their own broadband offerings, more quickly and at lower cost.

The Bell companies also argue that deregulation is of critical importance to accelerating the deployment of DSL services to rural America. This argument may make a good sound bite and appeal to Senators from rural states, but it makes little sense. ADSL does not work when a customer is more than 18,000 feet from the phone company central office, as is common in rural areas. Furthermore, if the Bell companies are so committed to rural deployment, why are they selling off significant portions of their rural exchanges? There is reason to be skeptical of Bell Company claims that “if you give us just one more regulatory break, we’ll roll it out.” This sort of compromise has been struck before and, invariably, the fabled services never quite materialize. In fact, other technologies, such as satellite and wireless delivery systems, may offer more significant potential for delivering high-capacity broadband service to high-cost areas of the country.

Some Bell Companies have attempted to justify regulatory relief on the basis of a supposed “backbone capacity shortage.” In reality, Internet backbone capacity is increasing at an exponential rate, doubling every several months, fed by a vibrant, highly competitive market. For example, PSINet’s network traverses the entire country with more than 230 points of presence (what we call “PoP’s”) in the U.S., and ours is one of several nationwide Internet backbones. PSINet has brought high-speed bandwidth to places like Salt Lake City, Utah; Joplin, Missouri; Toledo, Ohio; and Troy, Syracuse and Buffalo, New York. We maintain PoP’s in locations as diverse as Rutland, Vermont; Columbia, South Carolina; Des Moines, Iowa; York and Lancaster, Pennsylvania; Dublin, Ohio; Kalamazoo and Grand Rapids, Michigan; Mobile and Montgomery, Alabama; Manchester, New Hampshire; Pittsfield and Westford, Massachusetts; Green Bay, Wisconsin; Chico and Bakersfield, California; and Vineland, New Jersey. These places are as important to our network as New York, Phoenix, and Wilmington. Our network is designed specifically to deliver broadband capacity, in response to increasing demand by customers throughout the country. PSINet and other Internet backbone providers are doing their part—bringing high-speed Internet access to rural, as well as urban America.

Several features of PSINet’s network advance the goal of rural broadband service. For example, PSINet allows other ISP’s to peer (that is, to exchange traffic, much like telecommunications interconnection) with more than 100 PSINet PoP’s in the U.S.—for free. These direct connections to more than 10 percent of all Internet traffic help speed data transmission significantly, by avoiding potential congestion points at public peering sites. PSINet’s free peering arrangements make it possible for rural ISP’s to access our backbone-quality services at numerous PSINet PoP’s.

We also believe that cable providers, as they enter the Internet access arena, will bring greater diversity to that market, especially for consumers. We strongly believe that consumers will demand access to the ISP of their choice over cable broadband systems, and that the marketplace—not Government mandates—will provide the best mechanism for ensuring that choice.

We congratulate you for exploring these important issues, and we look forward to working with the Committee as it examines the issues of broadband deployment.

I. INTRODUCTION

Good morning, Mr. Chairman, and thank you for the opportunity to appear before your Committee as it examines broadband communications and competition policy. I am Bill Schrader, Chairman and Chief Executive Officer of PSINet. I am here to offer testimony on behalf of my company, PSINet Inc., and as a founding member of the largest trade association of ISP’s, the Commercial Internet eXchange Association.

When I founded PSINet in the eighties, our company was the first commercial Internet service provider (“ISP”) in the United States. We continue to be a leader in deploying high-speed, high-performance Internet services. PSINet, located in Herndon, Virginia, is now the largest independent facilities-based ISP in the United States. It is also the second largest ISP in Japan and the far east. PSINet’s network today includes more than 230 points of presence (“Pop’s”) in the United States, and more than 500 PoP’s worldwide, each designed and built specifically to handle Internet traffic from customers that employ a range of access methods.

I want you to know that Salt Lake City; Rutland; Columbia; Des Moines; York; Green Bay; Syracuse; Mobile; Manchester; Chico; Vineland and Kalamazoo are as important to our network as New York, Phoenix and Philadelphia. PSINet and our customers that are Internet service providers deliver Internet access to both business and individual residential users in these areas.

PSINet offers a full line of services to business, government, and educational customers, including 37 of the Fortune 100 companies, and federal agencies such as the Federal Trade Commission. The PSINet Carrier and ISP Services unit also offers consumer and commercial Internet services on a private label basis to a community of more than 6,000 U.S.-based ISP's, as well as some 500 large telecommunications providers.

PSINet engineers and executives have developed many of the most significant technical and product innovations in the Internet's history, and are at the forefront of broadband Internet backbone investment and development. PSINet also is actively exploring satellite and wireless delivery mechanisms in rural and other underserved areas. PSINet has a major stake in delivering to its customers throughout this country and the world high-quality, high-speed broadband communications capability.

Mr. Chairman, I am at this hearing today to tell you that the key to rapid deployment of broadband service is competition in local telecommunications markets. As the remarkably rapid deployment of Internet service this decade demonstrates, competition—not deregulating and expanding telecommunications monopolies—provides consumers with greater innovation, higher quality service, and more choices—all at lower prices. It is no coincidence that the United States has ample broadband capacity in the highly competitive Internet backbone market, and that the challenge for deployment of broadband service relates to deployment at the local level, where competition is only beginning to take root.

Under current law, local telecommunications monopolies have a specific path to deregulation. If they open up their local networks, then they can enter interLATA voice and data markets. This balance safeguards competition, while providing the Bell Companies with the keys to their own deregulation. I urge you to stay this course of competition, while encouraging additional broadband pipelines into the home via cable, satellite and wireless technologies.

II. CURRENT LAW HAS CREATED A VIBRANT FRAMEWORK FOR INTERNET GROWTH AND COMPETITION

The explosion of Internet access and Internet services to American consumers and American businesses has been unprecedented in the history of communications. Never before has a communications technology or medium penetrated consumer markets so quickly, and offered such a rich variety of information opportunity. Some recent statistics provide a sense of the growth of narrowband Internet access. Just prior to passage of the 1996 Telecommunications Act, there were 9.5 million Internet user computers that store and relay Internet communications; today there are approximately 43.2 million user computers in the U.S. The ISP market in the United States today is made up of more than 6,000 ISP's serving more than 60 million Internet users. Competition and service for the consumer is abundant—approximately 96 percent of Americans today have a choice of at least four ISP's within their local calling area. And the market should continue to grow explosively; one recent study estimates that one-third of U.S. households have Internet access today, and that two-thirds of U.S. households will obtain access by the year 2003.

As you consider what is the best set of rules for accelerating broadband deployment of local telecommunications services, think about whether you want rules that further entrench the Bell Companies in their local telecommunications monopolies or whether you want rules that encourage a competitive structure for the local telephone system and that support a competitive Internet. In contrast to the Internet, today's local telecommunications market is marked by the absence of competition. In fact, incumbent local exchange carriers control 99 percent of the country's local service business.

PSINet is one of the largest customers for each of the Bell Companies, and faces on a daily basis the consequences of the lack of competition in the local telecommunications market. Lack of local telecommunications competition produces fewer telecom choices, sub-optimal telecom offerings, and overpriced telecommunications services for Internet companies like PSINet, and ultimately for each and every Internet user in America. However, competition in local telecommunications markets will change this. For example, PSINet recently joined in a strategic partnership with Covad Communications Company to offer DSL services directly to our customers. As local competition grows, through competition over the incumbent monopolists' lines, as well as competition from cable, satellite and wireless providers, many more of these opportunities will be available.

I know based upon our experience dealing with monopolists in the local telecommunications market, as opposed to competitive ISP's in the Internet market, that the balanced incentive structure created by the 1996 Telecommunication Act

is critical for broadband services such as DSL to reach their potential. It ain't broke, and attempts to fix it will make broadband deployment slower, not faster.

There is absolutely no reason to exempt the services offered from monopoly facilities from the pro-competitive provisions of the 1996 Telecommunications Act. The incumbent's underlying local facilities used to provide DSL services are fundamentally part of its monopoly network, and have been paid for by the captive ratepayer. The 1996 Act's obligations for monopolies—open access to unbundled elements of the incumbent's network, cost-based interconnection, reciprocal compensation, and flexible collocation arrangements—are all necessary for competing DSL providers to gain a foothold in the market.

Consumers have benefited enormously from competition in the "narrowband" Internet. Once competition for broadband services begins to take hold in local telecommunications markets, the American consumer will be amazed at what the Internet/telecommunications industry can offer. Congress should stay the course and keep the 1996 Telecommunications Act intact to do its part to support the arrival of that competitive broadband market of tomorrow.

The principal justification for offering incumbent telecommunications monopolists regulatory relief is highly suspect. Bell Companies claim that such relief will greatly hasten their deployment of DSL services. However, due largely to competitive pressures, the Bell Companies *already* have significantly and aggressively rolled out ADSL products. The current regulatory environment clearly has not stopped the Bell Companies from entering the broadband market.

Some Bell companies argue that removing pro-competitive safeguards will accelerate deployment of their broadband ADSL services in rural areas. Now this argument makes a good sound bite, and I imagine that it is very appealing to Senators from rural states. But, based on my experience leading my company, and my understanding of high-speed Internet technologies, I have to tell you that it makes very little sense. ADSL is poorly suited to serving rural customers. It does not work when a customer is more than 18,000 feet from the provider's central office, as is common in rural areas. Furthermore, Bell Companies such as U.S. West have sold off many of their more rural exchanges.

Policymakers should also be skeptical of Bell Company claims that "if you give us just one more regulatory break, we'll roll it out." This sort of compromise has been struck before and, invariably, the fabled services never quite materialize. Instead, the Congress should stick to its commitment that competition, not deregulating monopolies, will get the Bell Companies to hasten deployment. Compromises made in the name of helping rural Americans may never, in fact, deliver DSL services to those same Americans.

Loosening regulation of incumbent monopoly providers is inadvisable because the 1996 Telecommunication Act already provides a sensible framework for Bell Company deregulation in this area. Current law does not saddle Bell Companies with any regulations that they do not have the power to release themselves from. It does, however, provide very sensibly that such deregulation be preceded by specific and significant demonstrations from the Bell Companies that they have, indeed, opened their local monopolies to competition. The Congress should let the Bell Companies deregulate themselves, as current law provides.

III. THE INTERLATA RELIEF THE BELLS PROPOSE WOULD RETARD, RATHER THAN ADVANCE, COMPETITIVE, COST-EFFECTIVE BROADBAND SERVICES

Under the 1996 Act, interLATA relief and local competition go hand-in-hand, which is good for the deployment of competitive broadband services. The Bell Companies have an enormous incentive actually to open their local market monopolies. That incentive is entering the interLATA market—both the traditional voice long distance market and the Internet backbone and interLATA information services markets. Congress was well aware in 1996 that the restriction applies across all of the interLATA services.

Providing the Bell Companies with premature interLATA relief before they fully open their local markets would fatally undermine local competition. For example, what Bell Company would have any real incentive to open its local markets to competitors if it were allowed into the interLATA data market today?

Some Bell Companies propose allowing interLATA data entry as a Section 271 "compromise." In reality, this is no compromise at all because incumbent monopolists could easily shift their voice traffic to their deregulated interLATA "data" lines. A "bit is a bit," whether voice or data, and incumbents would have powerful incentives to shift traffic in this manner. That would produce a variety of significant negative impacts, including ending the Bell Companies' incentives to open their facili-

ties to local competition by innovative competitors. Broadband deployment would be set back, not furthered.

Further, some Bell Companies have attempted to justify their desire for interLATA relief on the basis of an alleged “backbone capacity shortage.” As the FCC confirmed in a recent report, nothing could be further from the truth. In reality, Internet backbone capacity is increasing at an exponential rate, doubling every four to six months, fed by a vibrant, highly competitive market. PSINet alone maintains more than 230 points of presence (“PoP’s”) in the U.S., including the communities I mentioned earlier, that are connected to each other and to the Internet by T1 and T3 dedicated lines, augmented by 10,000 mile OC-48 backbone arrangements. Simply stated, PSINet’s network is designed specifically to deliver enormous backbone capacity, as demanded by the customer. Each PoP is built to a precise, full-service standard to allow customer choice of access method—dial-up analog, ISDN, or dedicated lines, and in selected markets, wireless transmission—so that it serves both large and small customers. PSINet’s national PoP deployment illustrates how Internet backbone providers are serving smaller communities with high-speed network access points, even if that community may not be able to support a large DS3 PoP. PSINet and other Internet backbone providers are doing their part—bringing high-speed Internet access to rural, as well as urban America.

Several features of PSINet’s network—which traverses the entire country—advance the goal of rural broadband service. For example, PSINet allows other ISP’s to peer (exchange traffic, much like telecommunications interconnection) with more than 100 PSINet PoP’s in the U.S., for free. These direct connections to more than 10 percent of the traffic on the Internet speed data traffic significantly by avoiding potential congestion points on the Internet. As PSINet’s free peering arrangements illustrate, rural ISP’s may access PSINet’s backbone-quality services at numerous PSINet PoP’s.

Keep in mind, as you think of our network, that in the highly competitive Internet market, PSINet is only one of *many* ISP’s that provide backbone access and services to all Americans. Other companies competing in this market include: AT&T, MCI WorldCom, Sprint, Qwest, and Level Three.

Further, other technologies than Bell Company wireline facilities, such as cable, wireless and satellite delivery systems, offer tremendous potential to deliver additional high-capacity broadband service to all areas of the country. For this reason, while I agree wholeheartedly that cable plant should be open to competition, government regulation is not the appropriate way to ensure that goal. Cable companies must make massive investments in their infrastructure to deliver reliable, two-way Internet access. Once that investment is made, if cable operators refuse to open their systems to those of competing Internet service providers, then I am convinced that consumers will turn their backs on cable Internet access. If the market for broadband Internet access eventually becomes a “duopoly” (instead of the current ILEC-dominated local monopolies), perhaps there will be a role for Government to address that situation. But in the meantime, I believe that the market, not regulation, will most effectively “open” the cable plant to a variety of Internet service providers.

IV. THE INTERNET SHOULD REMAIN FREE OF ENCROACHING GOVERNMENTAL REGULATION

The other message I would like to share with you today is that competitive markets—and the Internet, unlike local telecommunications markets, is a classic competitive marketplace—should be left to operate free from government regulation. This, too, is a fundamental aspect of current law, and I urge you to stay that course, as well.

In contrast to the local exchange market, today’s Internet market is highly competitive and dynamic. Backbone providers may build high-speed capacity, or acquire or lease it from long distance providers or providers of newer transmission methods. Unlike the local telecommunications market, no Internet provider today enjoys a monopoly on services, so that issues of reliability, speed, and quality of service are key determinants to the survival and success of each provider, whether one looks at the Internet backbone providers or the local dial-up ISP providers.

Indeed, the innovation driving much of today’s Internet stems from the market imperative for competing providers to develop new and better approaches to enhance speed, reliability, and customer satisfaction. This market-based innovation furthers the highest objectives of U.S. telecommunications policy by promoting advanced services through competitive markets. The remarkable success of the Internet flourishes because there are a multitude of innovative providers and because the market, and not regulation, dictates success. Congress should continue to exercise

restraint, and resist any urge to “control” the Internet or to make providers of Internet services—be they independent providers like PSINet, or incumbent monopolists—liable for the actions of third parties.

V. CONCLUSION

By maintaining pro-competitive regulation of local telecommunications monopolists, while refraining from regulating the highly competitive Internet market, Congress will best promote the rapid, low-cost deployment of broadband services to all Americans.

WILLIAM L. SCHRADER, Chairman and Chief Executive Officer

William L. Schrader is chairman of the board of directors, chief executive officer, and founder of PSINet, a global facilities-based Internet Protocol data communications carrier focused on the business marketplace. Publicly traded on the NASDAQ market as PSIX, PSINet operates in 14 countries, serves over 60,000 companies, and offers a broad suite of advanced commercial Internet and Web service products.

Schrader has authored numerous position statements, spoken at industry events, and appeared on Capitol Hill to present industry and corporate positions on such issues as Internet encryption, the domain name system, and the Communications Decency Act. In addition, he has participated in panel discussions of industry trends and issues on mainstream electronic media such as CNN, CNBC, MSNBC, FNN, First Business, and TechnoPolitics.

As PSINet chairman and CEO, Schrader has been instrumental in the formation of such industry groups as the Commercial Internet Exchange (CIX), the Internet Society (ISOC), and the Internet Operators Group (IOPS.ORG). He is also the driving force behind PSINet’s innovative peering initiative for U.S. Internet service providers. Recently, Schrader was named 1998 Master Entrepreneur of the Year by Ernst & Young and he was listed as one of the industry’s “20 to Watch” by Computer Reseller Magazine and “Top 10 to Watch” by Telephony Magazine.

Prior to forming PSINet in 1989, Mr. Schrader was founder, president, and chief executive officer of NYSERNet, a corporation that created the first regional Internet network, providing networking services to university, corporate, and government communities in New York state. Earlier, Mr. Schrader was director and founder of the Northeast Parallel Architectures Center at Syracuse University, a research organization for advanced parallel supercomputing technology.

Previously, Mr. Schrader was executive director and co-founder of the Cornell Theory Center, where he helped plan and build the \$100 million supercomputer center that supports basic research in computational science and engineering. At the Theory Center, he led the development of the NSFNET Backbone Network to connect the national supercomputer centers, which became the basis for the NSFNET system.

Mr. Schrader earned a bachelor of science degree in biology from Cornell University, as well as completing graduate work in business and finance.

The CHAIRMAN. Let me turn to you, Mr. Armstrong. Given how you emphasized the convergence of various consumer devices—appliances, the desktop computer, and the Internet—I think my first question may be particularly important to the discussion we are having today.

Set-top boxes will be for most consumers their way of accessing the Web in the future. These will be instrumental in the convergence of the television and the desktop computer. And once we have cable broadband, these, “boxes,” will likely replace the desktop computer as the preferred method by which consumers will intersect and access the Internet.

Some have raised concerns regarding AT&T’s agreement with Microsoft to install up to 10 million broadband set-top boxes. The concern, as you can imagine, is that the agreement will create a de facto standard for set-top box operating systems and foreclose the market for competing operating systems.

Now, I want to note that I am not picking on Microsoft and would be asking this same question if AT&T’s agreement had been

with any other software maker. It is a legitimate question and it is one we have to resolve, and I know you can, or at least I believe you can. I do wish Microsoft the best in this new market as long as they compete fairly and win market power due to the superiority of their product. If they do that, I am all for them.

Now, Mr. Armstrong, what I would like to know is if a consumer were to purchase AT&T's broadband service, would that consumer be able to choose between set-top boxes in the same way that consumers can choose between competing desk-top computers today, or will consumers be limited to the set-top box chosen for them by AT&T?

Mr. ARMSTRONG. The answer to that question is they will be able to choose. And if I could put some substance behind that statement, first, in the arrangements with the supplier base of both hardware and software for set-top boxes, because both are very important and one could preempt or preclude opportunity if not done appropriately, AT&T and the cable industry, through its cable labs, has retained control of the architecture, which will be an open cable architecture.

And by open cable architecture, what that means is, very similar to the computer industry, there will be standards. That means there will be protocols set. That means there will be interfaces established. That means there will be specifications that are anticipated, and that all of that will be publicly known and that all suppliers, be they hardware or software, who wish to participate must comply and, in fact, must go through a compliance testing to make sure they have complied so the consumer doesn't have something that is not mobile through time and technology as those both move forward.

Second, specific to Microsoft, they did get an increase from 5 million to 7.5 million for their software layer. They happen to be the only one who can provide it in that time frame. However, we are working with Sony for their software layer, and we are working with Sun for their Java software layer, and we anticipate that those will be in market.

On the set-top box, we are working not only with General Instrument, but we are working with Scientific Atlanta, both of which use a variety of software in their boxes. And we are in discussions with a Japanese consumer electronics outfit because we really wish the whole industry to participate and compete.

And let me just say that you can count on this in the future, not out of any grand malevolence on our part, but out of self-interest, because the more that participate in a multi-supplier and vendor hardware and software environment, the more value they are going to bring to the consumer and thus to the set-top box offering, and the more we are going to be able to offer consumers as a result.

The CHAIRMAN. Let me follow up with another question, Mr. Armstrong. In your testimony, you stress that the agreement between AT&T and Microsoft requires Microsoft to disclose all application programming interfaces, or API's, which allows any firm to have the technical ability and access to create services and applications that work with the Microsoft software.

Now, how does your agreement with Microsoft ensure that, in fact, the API's are properly disclosed, and how will this be enforced?

Mr. ARMSTRONG. We police that and we require its enforcement. The API's are the application program interfaces, and any other software supplier or any device manufacturer who wishes to interface to those layers of software that Microsoft might provide needs those interfaces in order to use the function to transport information back and forth, to exercise the control between the devices and the applications. And so we require as a matter of contract the timely and effective publication of those interfaces, or we just will enforce it or constrain Microsoft going forward.

The CHAIRMAN. Should an independent third party similar to the independent third party you suggest oversee the RBOC's to ensure consumer safety and quality service in the local telephone market? Should an independent third party ensure that AT&T and Microsoft are providing open access with regard to set-top box applications and content development?

Mr. ARMSTRONG. Well, this is so much in our own interest and there are so many industry participants that if we didn't do it, we would be dumb. And if we didn't do it, all the industry participants, Mr. Chairman, that I indicated, from Sun Microsystems, to Scientific Atlanta, to the Japanese manufacturers, to General Instrument, would be absolutely outraged. And so we are encouraging an open system and policing an open system and enforcing an open system. And I think we will be accountable to the market, the public, and our supplier base for that.

The CHAIRMAN. Let me just finish with one question to all of you and then we will turn to our other Senators. Some would say that because the high-speed broadband market is so new—indeed, broadband services are just now beginning to be rolled out—that Congress should wait and let the market and technology develop before deciding whether legislative action is necessary.

Both Mr. Mandl and Mr. Armstrong have testified that wireless, DSL, fiber optic coaxial cable, and satellite are all methods for delivering broadband Internet services. I am interested in learning whether the playing field is level so that these various methods and the companies employing them can compete fairly in the broadband Internet services market. I also would like to know if any of these promising technologies might be hindered by unnecessary government regulation.

So maybe we will start with you, Mr. Schrader, and just go across the table.

Mr. SCHRADER. The only problem PSINet sees in my experience with all the other ISP's is the local loop, which is dominated and absolutely iron-fisted controlled by the regional Bell companies. They will not allow us access to DSL, as they should and must if they want to compete. That is why we hope that you don't disrupt the 1996 Act, and require them to comply with the 1996 Act before they are allowed to use their monopoly power against us.

The other playing fields—satellite, wireless, cable—all of those choices are not monopolies. They are a direct result of investments made by companies who have a strategy. We appreciate those strategies. They have the right, in my opinion, including AT&T, to

use their asset which they purchased with their money and are continuing to invest in any way they wish. They will be forced by market pressure—Mr. Armstrong will be forced by market pressure from the wireless, from the satellite folks, and from us using DSL to open up their system over time to other ISP's. I don't think you need to do anything with the non-regional Bell company situation.

The CHAIRMAN. Mr. Mandl.

Mr. MANDL. I have commented on sort of two, you know, issues that we face as a new company. Certainly, the local environment we have touched on. We have addressed the building access issue is an issue for us that is being worked on both by the FCC and some of you.

But I think beyond that I want to say it is clear that these technologies that you have referred to are evolving at a very rapid pace. And I think competition in the marketplace ought to allow for those technologies to prove themselves, to demonstrate that they can deliver services in a cost-efficient way to consumers. And I would suggest that the less interference, the less of a regulatory environment that has a bearing on these technologies, I think the better off we will be.

As a new company, frankly, and just getting started 2½ years ago, the regulatory environment needs to be one that has a minimal impact on us. We are still a regulated business and we have to get approval for a lot of things, and these approvals sometimes take time. The less the regulatory environment slows us down, impairs us, holds us back, I think the faster we can develop our capabilities and address the issues in the marketplace.

The CHAIRMAN. Thank you.

Mr. SEIDENBERG. Mr. Chairman, on this point, as you might expect, I do think there are many areas of unnecessary regulation. Just quickly, a lot of the panelists talked about the capacity being put into broadband. By FCC reports, Bell Atlantic puts more fiber in its network than all of the long-distance industry combined. So it is not an issue of capacity. It is an issue of where it is going, and we don't feel it is going to a broad spectrum of all of the customers that we serve.

The key thing to us is we think the market is open. People are making investment. Wall Street rewards companies for spending lots of money in these markets. People have access. When you look at the things that we have done in terms of the Act, the Act is generally working. But I think as the Congress has said in making some adjustments in the cable situation several years ago, there is a need to adjust some big rules.

And the issue is very simple to us. Wireless has worked well; it is lightly regulated. Standards are regulated by the authorities, but pricing and market entry rules are regulated differently. Intranet is a very important new phenomenon, new technology, and we should not be regulating the Internet the way we regulate the old voice business. It should be regulated more like the way the wireless industry is being regulated, and therefore I think there is a need for Congress to adjust some of the big rules and make sure that this is moving in the direction that it should.

The CHAIRMAN. Mike.

Mr. ARMSTRONG. Mr. Chairman, I think the Internet industry, as several of you in your comments indicated, is a very nascent industry. We are just at the beginning of this revolution. Now, we have got three speeds at which we conduct it at. We have dial-up narrowband, we have high-speed, and we have broadband.

As a matter of fact, the narrowband is growing faster than the broadband. I think AOL last quarter added 1.8 million narrowband customers, and I think in our @Home service we have 300,000 to 400,000 in total history to date. And so this whole phenomenon is just beginning; it is nascent. And I would really urge us to let the market sort out the dynamics of Net speed that are happening in the fast-moving technology and companies that are moving into it.

I would like to make the point, however, on DSL that I am probably going to be Mr. Seidenberg's biggest customer. He doesn't treat me always like that, but I am going to be because in the majority of the market I will not have a facilities-based offering. In the majority of the market, I will have to resell communications services which he produces. And so we do need an economical and operational resale of both voice and data, since they are obviously converging.

The CHAIRMAN. Thank you.

Senator Leahy, we will turn to you.

Senator LEAHY. Thank you, Mr. Chairman.

Mr. Armstrong, we seem to bring you down this same time every year and so it is good to have you back again. If we have to suffer Washington this time of the year, we want company.

Mr. ARMSTRONG. I hope I am good company.

Senator LEAHY. Mr. Seidenberg gets more of a chance to come up to Vermont and see me there.

When you were here before the committee a year ago, I asked you whether you would offer your, I believe, valuable broadband pipeline to Internet access providers and service providers other than your own affiliated Internet and online service providers. And you said, "It would be absolutely silly for that to be a closed system."

But it appears that AT&T is fighting local efforts across the country to require that you unbundle your pipeline from ISP and OSP services and allow your broadband customers to use an ISP or OSP of their choice without paying twice, as I said in my opening statement, once for @Home and a second time for the ISP or OSP of their choice. Is this consistent with what you said last year?

Mr. ARMSTRONG. Yes, sir, Senator, it is, and may I explain why?

Senator LEAHY. Sure.

Mr. ARMSTRONG. First, I meant open to content, and I believe the service is open to content, whether the content is from the producer, such as a Disney or a Fox, that contracts with us and exists on our system, or from a consumer standpoint I want to get to content, because with one click with the @Home broadband service, I go right to anyplace on the Internet. I am never impeded by extra promotions and advertising and subsequent screens I have to deal with. I get the content.

The second thing is it is open to communications. Our chat lists, our addresses, our numbers, our messaging, our e-mail are all open

beyond our own domain, so that anybody can communicate with anybody else.

Second, we are very much open to the access of our competitors. Many portals are very highly used and accessed from @Home. Yahoo and Lycos are both very heavily accessed, not just Excite, which is the portal that is on @Home, and are used in access. And so, yes, I believe that we are open. Our architecture is open, our communications are open, our content is open, and our ability to get to other Net and portal providers is open.

Senator LEAHY. But if somebody wanted a different ISP or OSP, they have got to pay for that on top of @Home.

Mr. ARMSTRONG. They don't have to pay me anything. Let's talk about an OSP, AOL, because this is the one I have heard the most about. They have a bring your own access service, bring your own ISP. So if you, say, take your Internet service from a local ISP and you pay them whatever you pay them, \$21.95 a month or \$25 or whatever a month, and AOL says bring your own access and we will charge you \$9.95 for our content service, we have the same arrangement. We are an access provider.

For \$39.95, with the modem and free installation, you can get to AOL just like that, and you can be an AOL customer if you pay that \$9.95. We have not chosen to charge that \$9.95. Yahoo doesn't charge that \$9.95. Lycos doesn't charge that \$9.95. But AOL has a business model and they can charge that \$9.95 for their portal services.

Senator LEAHY. Well, your arrangement—and correct me if I am wrong on this—is between @Home and cable operators and it is an exclusive licensing arrangement that you have, is that correct, that expires in a few years?

Mr. ARMSTRONG. Yes. In 30 months, there is—I didn't make this up. There was a contract that the cable companies had put together with @Home for promotional front-page exclusivity.

Senator LEAHY. But at the end of that time, the cable companies are free to either renew it or they can shop around for other ISP or OSP partners.

Mr. ARMSTRONG. That is right.

Senator LEAHY. Can they simply unbundle the broadband pipeline and let broadband customers choose their own ISP or OSP?

Mr. ARMSTRONG. The cable companies at that time would have to consider what their relationship would be.

Senator LEAHY. The reason I ask is I am thinking of places like Broward County, in Florida, or Portland, OR, that are kind of stepping in and regulating in this area. We have not done that in the Congress. We could either wait to see what happens when the exclusive licensing arrangement expires and see what the market does, or we could step in, as Broward and Portland have.

And I don't pretend to be an expert in what they are doing, but to use a recent film, they are sort of the "mini me" of us. I am going to catch hell from my kids for doing that. But why shouldn't we just step in and do the same thing they are doing? I will just toss you a softball and see what you do with it.

Mr. ARMSTRONG. Well, for three reasons. One is that the Cable Act very specifically calls out conditions in which municipalities can invoke their jurisdiction. This cable situation is not one of

them, so the jurisdiction is a national jurisdiction. There are maybe 20 or 30,000 municipalities. I don't think it would be good for the country to have the jurisdiction for either cable or communications, which I would consider as one, at a municipal level in America. It needs to be at a national level.

Second, it violates the contract that we have with the municipality. And, third, of course, it violates the contract with @Home and the cable companies. So I don't think it is a very good ruling and, of course, we will appeal it.

Senator LEAHY. Well, Mr. Chairman, I know my time is up, but I thought Mr. Seidenberg had suggested a mandate that requires cable networks to allow consumers a real choice in their Internet provider, with the terms left to the marketplace.

The hope of the Telecommunications Act was that the cable companies would provide a facilities-based alternative to the incumbent phone company for local telephony. We talked about the editorial cartoon where the phone rings and the guy walks over and picks up his television and says "hello, hello."

We have cable Internet service. We don't have cable telephony, except in test markets. And I am just wondering how long it will be before all that comes. I am reluctant to speak of regulation because, on the one hand, it is so difficult to anticipate where the markets go. On the other hand, I worry that if we are going to allow the market to sort of set some of these parameters, is it a totally free market?

Mr. ARMSTRONG. May I comment on how fast?

Senator LEAHY. Sure.

Mr. ARMSTRONG. We are piloting in 1999 in 9 of the 10 cities in our TCI cable communities telephony over cable, where we will offer any number of lines, package features and function, distinctive rings, at lower prices. But the cable companies' infrastructure—and I don't just mean the fiber and the repeaters and the connections that are out in the field, but I am also talking about the ordering and the provisioning and the dispatching and the inventorying and the billing and the remittance processing and the customer care and the servicing—all have to be trained in order to do this with the quality and the reputation of AT&T.

And so getting it right is as important as doing it fast. And so in 1999, we are going to pilot in 9 cities. We are spending billions and billions of dollars to upgrade the physical plant and equipment. In Fremont, we are rolling out to thousands of customers. In the year 2000, those pilots will also roll out to hundreds of thousands of customers.

We are talking about the opportunity to scale to millions of customers, and that will probably be in the year 2001. And that is not out of a lack of money or our interest in acquiring more customers. It is a matter of scaling with quality.

Mr. SEIDENBERG. Senator, just very quickly, I would point out today at Bell Atlantic, a customer can procure facilities and use any ISP they choose, including Bell Atlantic's. We are not allowed to say to the customer, you will buy our ISP and, oh, by the way, if you want access to another one, also pay us for ISP.

I think what you might ask is a different question, and that is when you procure a cable modem, @Home and RoadRunner with

any of the cable services, yes, you can get access to other ISP's, but you also must pay for the @Home or RoadRunner. In our case, going forward, people can order this new DSL, this new broadband service, and we have open access. You can use any ISP you want.

I think this is an area that there is an imbalance in the direction that we are heading in, and I think there is some room here for some adjustment of the law to make sure that this is done in a way that is balanced in both sets of companies offering the same services.

Senator LEAHY. Thank you, Mr. Chairman. I would recommend, because the record does stay open, if both of you want to add to what we just did—and I realize we went somewhat superficially, but, Mr. Seidenberg, if you want to add, or, Mr. Armstrong, you want to add to your testimony on that or write to me directly, I would appreciate it.

Mr. Chairman, I think you and Senator DeWine and Senator Kohl have done a service in having this hearing. Unfortunately, I have to go to another hearing.

The CHAIRMAN. Thank you, Senator. We will keep the record open for you to add additional statements because, by necessity, we can't get into everything here, but we would like you to be able to put whatever case forward you would like to to help us to understand this better.

Senator Thurmond.

Senator THURMOND. Thank you, Mr. Chairman.

Mr. Armstrong, if AT&T purchases MediaOne, you will have an ownership interest in cable systems serving 40 percent of the Nation's households. You have said in the press that this will not make AT&T broadband too large a player in the telecommunications marketplace. If AT&T continues to expand into cable, what percentage of the marketplace would make AT&T too large?

Mr. ARMSTRONG. I think when the marketplace or the Congress or the regulators judge that we were not pursuing a course of competitiveness and promoting competition and that we were too powerful and keeping or stifling competition.

Senator if I may, the purchase of MediaOne has 5 million subscribers and 8 million homes passed. And TCI has about 10.5 million, 11 million subscribers and 16 million homes passed, and that only adds up to 24 million out of 103 million. And the only way that I can get to 40 percent is if I owned and operated Time Warner or I had all the attribution rules applied to the minority equity investments. And I can't seem to make deals with these guys in order to get that kind of access.

So what I am confronted with right now—and that is why I think I am going to be one of Ivan's biggest customers—is that my broadband cable reach with MediaOne and TCI will be about 24 percent, with, I hope, an opportunity to strike a joint venture of some sort with Time Warner.

Senator THURMOND. Mr. Armstrong, you say in your written statement that you will employ your broadband service in every rural area served by your cable systems. What plans do you have to continue building out these cable systems to serve more Americans living in rural areas?

Mr. ARMSTRONG. This year, we are committing billions of dollars in order to upgrade those facilities wherever we can accomplish that. What that means is that we want to take the old analog video, which is just broadcast, and we want to upgrade it so that it will be high-capacity for the 1,000 channels. It will be two-way for interactive, including data, and we will convert it from analog to digital.

And we are absolutely committed to serving everybody that we can serve, whether they are rural or inner-city. And that is why I made the comment that where our digital services exist, we will offer connectivity to the schools and libraries. We will offer service free of charge to those schools and libraries, and we have already announced and are implementing with the Urban League and the NAACP technical training programs. And so you can count on us to serve all of the communities that we have facilities in.

Senator THURMOND. Mr. Armstrong, I understand that GTE has conducted some tests with America Online in Clearwater, FL, that GTE says demonstrate the technical feasibility of opening up access to cable modem platforms. What is your assessment of these GTE tests?

Mr. ARMSTRONG. I haven't had an opportunity to speak with the GTE engineers directly, but I have had a summary of it, Senator, that several ISP services were conducted through a router that interfaced to a headend, which is a cable headend, to just a couple of customers. I think we all know how to do that. The issue is, with 8,000 cable companies and tens of thousands of headend and 8,000 ISP's, how, in volume, would that diversity ever be managed on the traffic flow.

Unlike the Bell network, the cable network is a shared network. When that cable line comes down to the households in a neighborhood, everybody shares that capacity. And so the more traffic and the more diversity, the more performance degradation that takes place. Thus, we have to manage, if you would, from the headend the traffic that goes down there and keep the performance levels up. If GTE has got a good idea, or even a better idea, I promise you I will grab it and I might even take credit for it.

Senator THURMOND. Mr. Seidenberg, I understand that many Wall Street analysts believe the telecommunications market is going to evolve into largely a data market rather than a voice market in the near future. If you get authority from the Congress to provide data services without any restrictions, how can we be assured that you will still aggressively seek to offer voice services in competition with long distance carriers like AT&T?

Mr. SEIDENBERG. Senator, the overriding vision for our company is to transform ourselves into providing digital signals everywhere in high-band-width ways, get out of the old voice business and move into the new digital world. With changes in the law, we will be able to create the investment base to get out to more places than currently the competition and the people who are entering these markets provide.

There is a big question about whether or not somehow our eye would be taken off the ball, and I think the issue on this is pretty simple. The voice business today is still growing at 7 percent. It represents a huge opportunity for our company. There has been no

indication on our part that we are seeking to change any of the 14-point check list issues as they apply to the voice business.

As some people know, we are working through that right now, and while I think the rules may be a little bit awkward and biased, the fact is we will comply with the voice business. To us, this is about not applying old rules to a new technology and denying large numbers of people the opportunity for Bell Atlantic to participate in the market. So I don't think there is any issue with incentives because we are not asking for any change in the law as it relates to the voice business.

Senator THURMOND. Mr. Seidenberg, what is your view of the \$5 billion investment recently made by Microsoft with AT&T?

Mr. SEIDENBERG. Well, Senator, I am not an expert on Microsoft or on set-top boxes. But as a pragmatist, what I would say is if we took everything that AT&T says about this, my only question is let's measure it, verify it, and create some big rules and make sure somebody can enforce it. I think the issue we have here is one of—I think that putting all this responsibility in the hands of two companies, Microsoft and AT&T, to make sure that our self-interest works, where I come from I don't think that would work.

Senator THURMOND. Mr. Schrader, I have one question for you. Many say that broadband access is at an early stage of development in the industry and that it is too soon at this point for there to be a need for the Congress to regulate broadband access. Do you agree, and explain.

Mr. SCHRADER. Yes, Mr. Thurmond, I agree. The broadband technology is the driving force here. The availability of Internet at very high speed is the driving force. There appears to be only one slowness in the deployment other than technology, and that is the availability of the regional Bell companies' copper loops. And if we could have access to that openly and quickly, as opposed to them controlling it for their own deployment, then things would move much faster. The rules for doing that are already in place. The 1996 Act is what we need.

Senator THURMOND. Mr. Chairman, thank you very much.

The CHAIRMAN. Thank you, Senator.

We will turn now to Senator Kohl.

Senator KOHL. Thank you, Mr. Chairman.

Gentlemen, you are all rivals in the marketplace, and while you have all been gracious and articulate today, clearly you have concerns about each other's behavior. And also, I am sure all of you have concerns about the FCC.

I would like to ask each of you briefly, do you believe that the Telecom Act is working or do you have some reservations about it? I will start with you, Mr. Schrader and we will move leftward.

Mr. SCHRADER. Yes, Senator Kohl, it is working, and the FCC is doing a fine job implementing. Things are a little slow, but it is not slow because of the inaction of the FCC. It is slow because of the inaction of the regional Bell companies. Their foot-dragging, the court battles, the lack of interest in actually opening up their facilities—all of these things are slowing it down. The FCC probably does not have enough teeth to go after them. That is the only slowness.

Senator KOHL. Mr. Mandl.

Mr. MANDL. Well, I would say that it is working. And I think as I said in my comments before, the notion of opening it back up and revisiting it and addressing some of the key issues, I think, would set things back enormously. It is not perfect. It has some problems that are being addressed by the FCC, but it is, I think, overall a great success and we ought to accept that.

Senator KOHL. Mr. Seidenberg.

Mr. SEIDENBERG. Well, it is working for everyone but us. So I think that, you know, just at the broad level, Merrill Lynch published numbers a couple of months ago that said there has been about \$175 to \$180 billion worth of debt and equity poured into this industry since the Act started. So you have to say that is good. That doesn't even count the premiums and the costs of the acquisitions that AT&T has made in their movement. So, certainly, the Act has created some open opportunities for people to invest in this new market.

As far as we are concerned, what we feel has occurred in the last couple of years is that the processes have been administratively slowed down by the competition agenda. We have delay after delay after delay. No one has ever accused Bell Atlantic of not spending \$1 billion; we have over 1,000 people every day of the week trying to comply with the 271 check list. And every day of the week, the carriers come up with new requirements that we have to find a way to satisfy.

So what we think is we have a process that was well-intentioned when it started, but it is broken. And the only people who are suffering for this are the consumers who do not have Bell Atlantic providing them long-distance service at this time, who do not have Bell Atlantic providing Internet hubs to those 17 LATA's in our area alone, and don't have Bell Atlantic as a vibrant national player competing in these very same markets. So our view is there is something broken and somebody needs to address it.

Senator KOHL. All right. What about you, Mr. Armstrong?

Mr. ARMSTRONG. Well, I too believe that the Telecom Act is working, but let me explain for a moment why. The Telecom Act for several years, you would have to say, wasn't working because it was hung up in litigation. It never had a chance to go to the FCC for implementation, never had a chance to get in the marketplace. So it is a fairly recent event, even though it was passed in 1996.

But once it was reaffirmed, all of us now had a stable and predictable, level playing field environment that we could look forward to. And if there is anything investment can't stand, it is fear, uncertainty and doubt, and the Telecom Act cleared that up. And if the Bell operating companies want to get into all these businesses like long distance, voice and data that they would like to and to be a national player, all they have to do is comply with the Telecom Act and the 271.

Senator KOHL. All right. Gentlemen, some believe that cable companies should be required to permit all Internet service providers to grant access to their broadband networks on non-discriminatory terms. However, some of these same advocates also say that they don't think the mass market is clamoring for broadband services.

Mr. Schrader, is cable broadband so unique that cable companies should be required to permit Internet service providers, including AOL, equal access to their broadband services on a non-discriminatory basis, or do you believe that the marketplace will leave these systems open?

Mr. SCHRADER. The latter. I believe that the marketplace will force Mr. Armstrong and all of his compatriots that control somewhere 5 and 80 percent of the cable-provisioned homes with the technical ability to deliver multiple ISP's on the same physical plant. And the marketplace will dictate to them that they have no choice but to do it.

Their business models will be enhanced once they do it. They have at least 60 channels, perhaps 170 channels, under some physical plant. Once they have two-way, they could very easily—in fact, we have done it. In fact, we had the first cable television–Internet service introduction in Boston with Continental Cable Systems in 1993. We know how to do it; he knows how to do it. It is technically feasible.

When the business plans require it, which means that the three gentlemen on the right side here all have a technology that delivers broadband into the same home, then you will see Mr. Armstrong do it willingly. He does not need government requirements.

Senator KOHL. Mr. Seidenberg.

Mr. SEIDENBERG. Well, I don't think the marketplace has policed cable increasing their rates every year since 1996. In fact, you know, our rates haven't moved at all. So I think there is an issue here, and the issue really boils down to we are not proponents of more regulation. We are proponents of deregulation of the Internet and making sure that we have the same rules. We have two different sets of companies offering the same products and services and they are regulated differently. It makes no sense.

Senator KOHL. Mr. Mandl, what do you think?

Mr. MANDL. Well, I am a strong believer in the free marketplace. And as this industry is evolving as quickly as it is from a technology and from a customer point of view, I think the marketplace ought to give us a chance. I understand the concerns and I understand the issues from a consumer perspective. And, you know, down the road if there are some issues that need to be addressed, you know, so be it. But I don't think we ought to start off before we know all the facts impacting or regulating things, when the marketplace in all likelihood will drive these things in the right direction.

Senator KOHL. All right. My last question, gentlemen, is this. If phone companies and cable companies partner up to form the networks of the future, then a lot of other companies, like Internet service providers, will need to go through those networks to reach their customers. Is there any danger that we will see toll collectors attempting to profit from any roadblocks along the network?

Mr. SEIDENBERG. Well, since I will be in the minority on this question, I might as well go first. The answer is you have that today. If you get a cable modem today, you pay for the @Home or RoadRunner independent of any other ISP or portal you want. So the issue is I think you already have the question.

And, again, I will come back to my theme here. Certainly, Bell Atlantic doesn't propose the myriad of rules and regulations imposed on anybody else. That would be a fate worse than death, I suspect. But I believe what needs to happen is readjusting the rules so for new technologies we are all under the same set of conditions in the marketplace.

Senator KOHL. Any other comments?

Mr. SCHRADER. Yes. With respect, I think it may be the wrong question, sir. There is a roadblock everywhere. In fact, to get access to Mr. Seidenberg's network, you have to pay him money. We call that service, he calls it service, and you can call that a roadblock. Under his rules which were created decades ago to enable him to have a monopoly that gives him a guaranteed return, he is required to open up his system and charge us the same prices he charges everyone else. That is his rules, that is his system.

The TCI system and the entire cable industry is built on a different set of rules; that is, they did the investment. There is no guaranteed return. There never has been a return to any of the cable operators. And unless they do something, there may never be a return. So they are attempting by spending billions of dollars to get a return. I encourage that.

You can't take Mr. Seidenberg's argument and implement it without understanding his base. He is a monopoly with a guaranteed return. TCI is not a monopoly across the United States, only on their turf, and they have a different set of rules and they do not have a guaranteed return. I say give the marketplace a chance and you will see us drive Mr. Armstrong and Mr. Seidenberg, and as well as Mr. Mandl's company and their competitors, to carry our traffic.

Senator KOHL. Mr. Armstrong.

Mr. ARMSTRONG. I would just like to reiterate a point on both access and contract. @Home over cable is an access to the broadband distribution. That means it has got computers and disk drives and caching and mirroring throughout its infrastructure that is an access to the consumer for this broadband service.

When @Home acquired Excite, which is a portal, Excite does not make its money off of subscriptions. Excite makes its money off of advertising, services, e-commerce and transactions. We did not charge for Excite. It is a portal. It makes its money by how it attracts commerce and eyeballs. And the access, in effect, to the portal Excite is \$39.95. The access to the portal Lycos is \$39.95. The access to the portal Yahoo is \$39.95. AOL chooses to charge \$9.95, in addition to that access, and so I don't think it is a bottleneck.

Second, there is an exclusivity contract that was mentioned by the Chairman between @Home and the cable providers that will expire in 30 months. And what that means is that they have the exclusive first page which is defaulted to if you are an Internet user, and that exclusive real estate on the screen will expire and the cable companies will have to determine at expiration how to deal with other OSP's and ISP's relative to that.

Senator KOHL. Mr. Chairman, my time is up.

The CHAIRMAN. Thank you, Senator.

We will now turn to Senator DeWine.

Senator DEWINE. Thank you, Mr. Chairman.

Mr. Armstrong, you made the point earlier that a share of the ownership of a cable company is not the same as owning the entire company. And I certainly agree with that and I think it is a point well taken. I think we can both agree that it is sometimes difficult, though, to locate the point at which your share of ownership begins to translate into a measure of control over the operations. That difficulty is why I indicated in my opening statement that the FCC, I think, needs to quickly move forward to provide some guidance in this area.

Now, with all that said, however, it seems to me that the fact that AT&T does have ownership shares of varying degrees in a number of different cable operations must have some competitive significance, and that is what I would like to explore with you.

For example, if AT&T has an ownership share, in a cable system that also sells programming content, doesn't that provide some incentive to favor that programming over other systems? Even on a more general level, again, as policymakers, can we really ignore the fact that AT&T does have some share of a number of cable operations, and doesn't that have any impact on competition?

If not, will AT&T be willing to meet the concerns that some have expressed about these ownership stakes and just sell them? Or perhaps AT&T can sell these stakes and come to terms with systems on a contract to use the cable wires of these systems. Where are we? What do you think?

Mr. ARMSTRONG. First, Senator, I agree 100 percent that the cable reg that we are both referring to that got suspended, what, 4 years ago needs to be redefined. And I hope it needs to be redefined in a policy environment rather than a transaction environment. I don't think the best policy is made based on a transaction, but rather hearing all concerns and interests and then a policy process.

The attribution rules really confound anybody. And none of us here invented them, but to have a 5-percent interest and be given, because there is no controlling interest of a second party—let's say on 2 million subscribers, we get full attribution, whereas we may have the same 2 million subscribers and have a 49-percent interest, but there is a second party who has a controlling interest. Then there is zero attribution, and that exists today in the suspended reg.

And so we have agreed to work with both the Congress and the regulators to define the balance between the concerns of the Cable Act, which were vertical integration—and you were mentioning this in your second point in terms of content blockage and getting all that content available to everybody who wants it—and the Telecom Act, which says go like hell to invest in facilities-based competition for local exchange services. There are some conflicts in that, and we have said that we will work with the FCC and the Congress, and will comply with whatever the outcome is.

In terms of content bottleneck, with the investments that we are making that I tried to outline where we are taking the 50- to 100-analog channel world to a 1,000 to 1,500 digital channel world, I do not believe that content blockage is going to be one of the concerns going forward. And, second, our interests lie primarily in dis-

tribution and not in content. And so I do not believe that you will see us in any way, shape or form vertically integrated.

Liberty Media, which was part of the TCI transaction, we paid no value for, we have no interest in. We have no management over it, and it is owned and operated and run by the Liberty management independent of AT&T. And so both legally and practically, AT&T just doesn't believe that it brings value to the production of content, but rather to the broadband distribution of all content, video, voice and data, is what our investments are in.

Senator DEWINE. Let me move to another area. Do you want to tell us how you are going to upgrade the existing cable facilities to accept two-way traffic and how much is that, in fact, going to cost? You touched on that a moment ago. And what are you going to do if it doesn't work? Is that possible? Is it possible it couldn't work?

Mr. ARMSTRONG. Mike, it is working. It is not possible that it won't work. It is working.

Senator DEWINE. Your stockholders will be glad to hear that.

Mr. ARMSTRONG. I will invite you to Fremont, CA, and we can both watch it. It is working. What you have to do is the plant of the first 25 years of cable was fundamentally a broadcast plant that was low-capacity and analog. And so we are going to spend about \$2.3 billion on converting that from a 350-megahertz plant to an 860-megahertz plant so we can get a lot more stuff through that megahertz.

We are going to convert it from analog to digital so we can get the compaction that we need for the expansion, and we are going to go down there and put repeaters so that we can not just go one-way, but two-way. And it is not rocket science or brain surgery. It is working and it is a matter of deployment.

Senator DEWINE. Mr. Seidenberg, you mention in your testimony the need to build new backbone facilities in order to continue the growth of the Internet. It seems that to this point there has been sufficient backbone to allow the Internet to grow at a practically unlimited pace. Is that true, and if so, what circumstances have changed to make this a concern today? And don't the backbone providers have an incentive to meet demand?

Mr. SEIDENBERG. Well, I think there is clearly a phenomenon that there is a lot of capacity. I don't think anyone would argue there isn't a lot of capacity. Our point is it is not getting everywhere. We have 17 out of 39 LATA's that don't have hubs in them, and I think that would be a clear indication that the economic incentives don't quite exist to make it as ubiquitous as it should be. And the reason is pretty simple to us. This is not a hard problem.

When you look at all the backbone facilities providers, they tend to have been bought up by the two or three or four long-distance companies. So what we have is a situation where clearly we are looking at our competition, in effect, having bought up the opportunity to provide the backbone facilities. And we think there is a little bit of an imbalance in that question.

Senator DEWINE. Mr. Schrader, do you have any comment on that?

Mr. SCHRADER. I disagree completely. We are in some of the 17 that no one is in. So I don't know that we don't count, Ivan, or not. We certainly have broadband capability deployed there. The basic

problem in Binghamton and Atlantic City is the high cost of the local loop which he dictates through the tariff procedures, and there you have it. Deregulate them. Under the rules already set by the 1996 Act, there will be competition and everything will be fine.

Senator DEWINE. Mr. Seidenberg, you get the last rebuttal. My time is up.

Mr. SEIDENBERG. I think what is interesting is PSINet has done a good job. And I would not compare PSINet to us, but 230 PoP's is the point I think I saw in the testimony. We have 266 municipalities in the State of Pennsylvania alone, so I am not so sure that the vision that has been talked about here has the scale to get to all the customers that we all need to serve. So I don't disagree with the details, but the issue is it is not anywhere near scalable to make a difference.

Senator DEWINE. My time is up. Thank you very much. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

Let me just say for the record that AOL has been most vocal on the cable open access issue and has taken a different position from PSINet. They were invited to appear today and they declined. So I just will say that for the record.

Senator Torricelli.

Senator TORRICELLI. Thank you, Mr. Chairman, very much, and thank you very much for holding this hearing. It has been very, very helpful.

To those who are testifying today, first, thank you very much for being with us. I should explain that in these hearings, for those of you who have not been before the Senate before, this is the Democratic side of the institution where we tend to protect against excessive government interference in the marketplace. [Laughter.]

The CHAIRMAN. I hope we can get more laughs than that.

Senator TORRICELLI [continuing]. And against the overly ambitious exercise of antitrust laws by the Justice Department, just for those of you who don't have experience with the Senate before.

Mr. ARMSTRONG, I wanted to return to the question of cable television because I think it is important for the record to fully reflect some of these facts which have been presented to us today, at some variance, I think, with reality.

Is it your estimation that with your purchases and current arrangements, you would control about 23 percent of the cable television market?

Mr. ARMSTRONG. Yes, that is right, but that is only of homes passed, Senator, not of homes connected.

Senator TORRICELLI. I understand.

Mr. ARMSTRONG. When we speak of the 97 percent of the Bell operating companies' presence, those are customers of theirs. When I speak of homes passed, that is just the cable run down the street. Only 60 percent of those are customers.

Senator TORRICELLI. So the actual number of homes served?

Mr. ARMSTRONG. Right, so the homes served is 5 million for MediaOne, and about 11 million. So it is 16 million homes served out of 103 million.

Senator TORRICELLI. Out of 103?

Mr. ARMSTRONG. Yes, sir.

Senator TORRICELLI. And before you assumed this leadership position, what would the accurate numbers be of the previous industry leader in homes served and passed?

Mr. ARMSTRONG. Probably, Time Warner was number one and they had homes passed probably of 18 to 19 million. TCI would have been number two, and then it as kind of a food fight.

Senator TORRICELLI. Eighteen to nineteen, so this new concern about whether or not there is a need for government intervention and whether we have reached some point in the marketplace that it should not be permissible is the difference between 19 percent and 23 percent?

Mr. ARMSTRONG. Yes, I guess that is right.

Senator TORRICELLI. For all the years I have been in this institution, I haven't heard this concern at 19 percent, but now the question is raised at 23 percent. Is that what we are talking about?

Mr. ARMSTRONG. That is right, and that is a very good point because even the suspended cable regulation has a threshold of ownership of 30 percent.

Senator TORRICELLI. Now, in my experience with cable television in the past, in all of these contracts with local communities they contracted with a single company and in that community the people in the community had a choice of an individual company.

Mr. ARMSTRONG. That is right.

Senator TORRICELLI. How has that changed?

Mr. ARMSTRONG. They still have that choice.

Senator TORRICELLI. In fact, it hasn't changed at all?

Mr. ARMSTRONG. That has not changed at all, and license transfers are not a grounds of authorization or of contractual flexibility for them to impose new conditions.

Senator TORRICELLI. Now, on the issue of content, it appears to me, though a strong advocate, you may have understated your case. In the case of Time Warner, they actually have an internal division of the company wholly owned and operated that dealt with content issues.

Mr. ARMSTRONG. Yes. They are a combination of a cable company and a content company.

Senator TORRICELLI. So with AT&T, with Liberty, you do not exercise control?

Mr. ARMSTRONG. No.

Senator TORRICELLI. They have a separate tracking stock and they deal with content?

Mr. ARMSTRONG. Right, and separate governance and separate control.

Senator TORRICELLI. So, indeed, the fact that you operate with 23 percent of the potential market and they operated with 19 really understates the comparison because indeed, in direct control of content, they have excessively more control than AT&T now operates.

Mr. ARMSTRONG. Oh, yes. They have a very strong content business, a very successful one, and I don't believe they think that they are being blocked from getting any distribution anyplace.

Senator TORRICELLI. Now, getting beyond the 23-percent number to Senator Thurmond's number of 40 percent actually requires that we are of the belief that AT&T is operating Time Warner.

Mr. ARMSTRONG. Yes, that would assume that we have control.

Senator TORRICELLI. How many board seats do you now operate on Time Warner?

Mr. ARMSTRONG. Zero.

Senator TORRICELLI. And so your policy control over Time Warner would be estimated how?

Mr. ARMSTRONG. Zero.

Senator TORRICELLI. So, indeed, there is no 40 percent?

Mr. ARMSTRONG. No. In fact, Mr. Levin consolidates the Time Warner entertainment operation into a consolidated income and balance sheet.

Senator TORRICELLI. I am running out of time, so let me just go very quickly. You have been introduced with a number of superlatives. One of them that was not said would be "generous," but indeed let me get to your generosity as a corporation. What do you estimate to be the investment you will have to make now after purchasing these cable operations in the continued putting of fiber into place? You talked about it in terms of mileage, not dollars. How do you estimate your investment?

Mr. ARMSTRONG. Well, to upgrade the TCI system, it will be \$2.3 billion. Then every subscriber that we convince that this is a good deal to take telephone service and compete for local exchange, we will have to spend on the average \$750 per subscriber, in addition.

Senator TORRICELLI. \$2.3 billion, and then \$750 per subscriber. A Merrill Lynch analyst wrote on January 29 concerning the decision to unbundle, "This decision will encourage further investment to get high-speed broadband two-way plant widely deployed. High-speed data or cable modem rollout will be accelerated by this removal of regulatory overhang."

Indeed, given this level of investment, if this Congress or an agency of this Government will require this unbundling, this degree of raising capital and this level of expenditure—would it either be financially wise or even maintainable at current costs if we were to require you to share this investment with competitors?

Mr. ARMSTRONG. The way it has been described by many is that they would like to ride wholesale on AT&T's investment. I would like to ride wholesale on AT&T's investment. But the facts are that wholesale in this life is more than retail because the services that we offer subsidize the infrastructure.

You pull away or don't succeed in those services and the costs are going to go up. You take those services away and wholesale is going to be higher than retail. And so it would have been a very foolish investment if all I had to do was step back and buy pipes that are cheaper than they are costing somebody else to provide them. And I don't think it is in the best interests of this country to ask anybody to subsidize anybody else.

Senator TORRICELLI. Finally, Mr. Chairman, just for one moment, if I could, to Mr. Seidenberg, with interLATA data transmissions over the phone lines outside your territories, as you look at the cost basis of doing so compared with competitors, if you indeed had this ability for data, can it be done on a cost-competitive basis so the marketplace would be giving an alternative to customers?

Mr. SEIDENBERG. Well, I think the easy example there is our proposed merger with GTE. GTE has a national data business that is

very cost-effective, very efficient, has large scale that probably ranks just behind Sprint and UUNET in terms of its size. It has got peering locations all over, and actually it is a bigger operation than—

Senator TORRICELLI. So you see your investment in capital cost as being competitive. Mr. Armstrong, then, unless the Federal Government is to force him, I believe unconstitutionally, to share his investment with competitors—then indeed there would be ground-based wireless and satellite competitors. We could have a marketplace that is full with a number of competitors on a relatively even capital cost basis.

Mr. SEIDENBERG. Well, I think your answer is right and you come out the right place. I think the inputs aren't quite what we think. I think in all the numbers here that you looked at, the denominator is wrong. It is not 103 million; it is 69 million. So you have to look at market share based on not the households, but look at the number of customers. So if you do all your arithmetic, the percentage of concentration is much higher than the 23 percent.

Senator TORRICELLI. Maybe, but doesn't it fairly come out to the point, though, that Mr. Armstrong with his investment has not radically changed the marketplace?

Mr. SEIDENBERG. I agree. I mean, the biggest point to us is that everything that AT&T suggests about getting a return on our investment is exactly the problem we are having with people trying to ride wholesale on our network. This is just a smokescreen to get lower wholesale prices from us and reduce the return that we get.

Senator TORRICELLI. I am sympathetic to that, and I want to see you in the data transmission business. I just don't want to see us compound the problem you have had by now forcing somebody else to make an investment and have people share on that investment.

Mr. SEIDENBERG. We agree.

Senator TORRICELLI. Thank you very much, and thank you for the time, Mr. Chairman.

The CHAIRMAN. Thank you, Senator.

Senator Schumer.

Senator SCHUMER. Thank you, Mr. Chairman, and I first want to thank you, Mr. Chairman, for holding these hearings and for keeping our committee on top of this issue, as we should be.

You know, my general view on all of this is very simple, and that is that you folks know more about this than we do, but that the markets and the investors and the inventors know much more about it than even you do. And 5 years from now, we can't predict what is going to be happening in large measure. There are going to be new developments that we don't know about, and that is why the business is somewhat of a precarious business, even though it is such a large business, in my judgment. A few years ago, I guess they were writing cable off and now all of a sudden cable is the hot thing. A few years from now, maybe it will be written off again.

Given all that, my general inclination would be to just say let it rip. In other words, why should the Government be involved? Since we don't know where the markets are going to be, since we are doing so well in the private sector, why should the Government be involved, except maybe at an antitrust level, which is always legitimate in every type of industry?

So my question to the four panelists is very simple. If there were a proposal out there to remove all regulation—everyone here has a reason to want certain regulations to be removed and certain regulations to be kept, but if there were a proposal to remove it all, let everybody do everything right now, because there are so many competing needs, would you and your companies support that?

Mr. ARMSTRONG. We will just go down here, Senator?

Senator SCHUMER. Well, it will go in ascending or descending order, depending on which end of the table we pick.

Mr. ARMSTRONG. Well, I am used to it with “A,” all right?

Senator SCHUMER. OK.

Mr. ARMSTRONG. I certainly support no new regulation and no new legislation. I certainly support don’t regulate the Internet. It is new. I do certainly support opening up the local markets. I do support enforcing the Telecom Act. I am not for taking the Telecom Act off the books.

Senator SCHUMER. Why not?

Mr. ARMSTRONG. Because I think that it is necessary to open up the local exchange market. I mean, if there is a 97-percent—

Senator SCHUMER. But the proposal I am making would allow anybody to enter the local telecommunications market and allow anybody to enter the long-distance market and allow anybody to enter all these other markets.

Mr. ARMSTRONG. Well, how would you enter? There are only two wires that go to the home.

Senator SCHUMER. Right.

Mr. ARMSTRONG. You have got a copper wire and you have got a coax wire. Now, let’s say it took 30 years for the coax to get built and 75 years for the twisted copper pair to get built. So if you said let’s let everybody in and compete, there is nothing to compete with unless you have some ability to use those wires.

I am investing in some cable, but most of what I am going to be able to compete in local exchange is in the resale of the existing copper wire. That is most of what I am going to be able to do. If you say eliminate the Telecom Act, and thus I cannot resale that wire, you are not going to have any competition because the facilities would take decades and decades to build out.

In 1984 when you deregulated the long-distance industry, you forced AT&T to resale its wires, and today they give 50-to 60-percent discounts to people like Ivan and others at a wholesale level. We have 500 long-distance companies and the prices have come down 55 percent. It is a good track record.

Senator SCHUMER. You bet.

Mr. ARMSTRONG. Resale is important. Market opening has to happen.

Senator SCHUMER. Well, go ahead, Mr. Seidenberg, and I will come back to Mr. Armstrong.

Mr. SEIDENBERG. I take it, and it is pretty simple here. I think what Michael just described is what I have been saying is the problem. How can you go out and make \$140 billion worth of acquisitions? In turn, however you want to characterize it, you are the largest long-distance company, largest cable company, and yet still somebody wants to write rules associated with regulating Bell Atlantic.

Senator when you use the term “deregulate,” the largest gravity is on our company. So I always worry about where the details are in this process. But I would point out, in the space of 11 months, we dug up all the streets in Manchester, NH, and put in new coax. So where there is a will, there is a way. It could be done. So our view is if there were big rules, because I think realistically you need some big rules, and let it rip, we are there.

Senator SCHUMER. Mr. Mandl.

Mr. MANDL. I am one of the strongest believers in the free market and let competition, you know, take its course. But I also need to tell you, and especially from my recent experience the last 2½ years in building this new business from scratch, without some fundamental rules it would be impossible for us to be successful in the marketplace.

So, unfortunately, for example, the Telecom Act, if that were to disappear, as I said earlier, I am not sure Teligent would exist today and would provide those services to the marketplace. So I think there has to be a foundation of a platform of regulation that allows new competitors to even begin to compete. Without that, I don’t think it would be possible.

Mr. SCHRADER. Senator Schumer, if I can paraphrase your question, would it be wise public policy to take a team of monopolists who have been trained by behavior modification for the past 50 years to abuse their customers, charge them too much, given them absolutely no innovation, and then say now you don’t have to be fair when you compete with your competitors? I don’t think so.

Senator SCHUMER. Would you state your real view, Mr. Schrader? [Laughter.]

Mr. SCHRADER. I think in 5 years, if the Telecommunications Act actually works and they stop dragging it through the courts and they actually do their job, in 5 years you and I will be in agreement. There should be no FCC needed in 5 years, except for regulating the constrained resource, which is wireless.

Senator SCHUMER. And wireless may become less constrained. Again, I don’t know much about it, but my guess is they will find ways of doing more and more on less and less on each little whatever it is, molecule of electronic transmission. So, that may be a change that happens.

Mr. SCHRADER. We are hoping for DWDM, dense wave division multiplexing, to attack his band width, then open it up to everyone.

Senator SCHUMER. Thank you, Mr. Chairman. I appreciate everybody’s answers. I thought it was a good exercise in the differences in the opinions here.

The CHAIRMAN. This has been a good panel. We have learned a lot here today.

Just one last question, Mr. Armstrong. One of the exciting promises that broadband holds is it will give consumers virtually an infinite choice of video programming. By this, I mean I will be able to go home, turn on my television or computer, and through my broadband service provider, get on to ABC.com or CNN.com and watch Ted Koppel or Larry King directly through their Web site. Now, I could either watch it live or watch it whenever I get the chance to watch it. That would be a terrific thing for a lot of people.

Now, it is my understanding that AT&T and other cable companies have stated that they contractually prohibit consumers from downloading or streaming video in excess of 10 minutes in length. I do recognize that these contractual restrictions were imposed before AT&T purchased the cable assets. As you can imagine, this has raised some eyebrows. Video streaming, of course, threatens to compete with the monopoly cable video product. Many people believe protecting this monopoly is the motivation behind the 10-minute streaming limit.

Now, can you explain the public interest, if any, behind this restriction and whether, as the new owner with a controlling interest in @Home and the cable facilities, will you continue to impose such restrictions on the consumer's ability to choose video programming?

Mr. ARMSTRONG. You are right. The video streaming limitation of 10 or 12 minutes imposed was that way before AT&T became a cable company, and the purpose of that imposition was to keep prices down. The build-out of the infrastructure has a certain set of assumptions as to how many users, how much video digital analog people can track for, how much Internet they can track for, and then what utilization they have.

You have everything from the casual user to the Net hog who seems to live on the Internet. And so the capital to upgrade the network is based upon a certain set of assumptions. Video streaming, which is what you are referring to, taking a Web site and just video streaming it like a television channel, consumes a huge amount of capacity. And so if a lot of sites did a lot of streaming, it would cost a lot, and thus we would have to raise prices or we have got to find a way to participate in that video streaming revenue.

So I think that you are right in the observation that that limitation needs to change, but we need to find out a commercial equation to pay for the change because obviously a lot of video streaming is going to fill up a shared network. People's performances are going to go down and they are going to be mad. And we are either going to have to charge them more for what they used to get or we are going to have to find a way for the people who are video streaming to pay for the upgrade that enables the performance to video stream to the consumer. It is something we have got to go work on.

The CHAIRMAN. Mr. Seidenberg, does your company impose such a restriction on its broadband products, DSL, or does it plan to do that?

Mr. SEIDENBERG. No. We have open access, open architecture. People can buy the loop, condition it the way they want, or they can buy the whole DSL service as a packaged offering.

The CHAIRMAN. Well, this has been an excellent panel and we have learned a lot here today. We would appreciate any additional information you can give the Senate Judiciary Committee and the Senate as a whole that will help us to understand these very complex issues even better than we do. You have all graciously given your time and we really appreciate it very much. I think you have helped us a lot here today, so I want to thank each of you for being here.

Mr. ARMSTRONG. Thank you, Senator.

Mr. SEIDENBERG. Thank you.

Mr. MANDL. Thank you.

The CHAIRMAN. Our first witness on the second panel is Ms. Anna-Maria Kovacs. Ms. Kovacs is First Vice President and Telecommunications Analyst at Janney Montgomery Scott, a brokerage and investment banking firm. She has been involved in the telecommunications industry for 17 years, working as a financial analyst or consultant. We are pleased to have you here, Ms. Kovacs.

Next, we will hear from Mr. Gene Kimmelman, Co-Director of the Washington Office of Consumers Union. Mr. Kimmelman was the lead consumer advocate on the Omnibus Telecommunications Act of 1996 and is a recognized expert on deregulation and consumer protection issues within the telecommunications industry. Prior to joining Consumers Union in 1995, Mr. Kimmelman served as Chief Counsel of the Antitrust Subcommittee of this committee. So we are really happy to have you back, Mr. Kimmelman.

Finally, we are fortunate to have Mr. Kevin Moore. Mr. Moore is Director of Deutsche Banc Alex. Brown, an investment banking firm. He serves as the firm's senior communications analyst. Mr. Moore specializes in communications services, including emerging growth and large cap telecommunications companies in the Internet access, competitive access, long distance, and local exchange sectors. So we are happy to have you here as well.

So we want to thank you all for appearing before the committee today. We are fortunate to have the benefit of this panel's expertise to help us learn more about the broadband issue. I may have to leave a little early. Senator DeWine will be here to finish off the hearing.

We will begin with you, Ms. Kovacs, and then when Senator DeWine gets here, I will turn the hearing over to him.

PANEL CONSISTING OF ANNA-MARIA KOVACS, FIRST VICE PRESIDENT, JANNEY MONTGOMERY SCOTT, BOSTON, MA; GENE KIMMELMAN, CO-DIRECTOR, WASHINGTON OFFICE, CONSUMERS UNION, WASHINGTON, DC; AND KEVIN M. MOORE, DIRECTOR, DEUTSCHE BANC ALEX. BROWN, BALTIMORE, MD

STATEMENT OF MS. ANNA-MARIA KOVACS

Ms. KOVACS. Thank you, and in the interest of time I will summarize the written statement that I have submitted.

The CHAIRMAN. That will be fine. We will put the full statement in the record.

Ms. KOVACS. OK, thank you.

My perspective, having watched both the cable and phone industries, since I do cover both, is that, first of all, I think the Telecom Act is now at the point where it is actually beginning to work. We have gotten to the point where there are several million resold lines. So on a non-facilities basis, we have some indication that both sides have developed systems that make it possible to exchange customers.

But more importantly, with investments like AT&T's investment in TCI and the proposed investment in MediaOne, and with the actual demonstration of cable telephony through Cox and MediaOne,

we know that cable competition for residential telephony is a very real event, which is something that a year or two ago was not clear.

I think we have also seen, not so much directly through the Cable Act, but through the Telecom Act, that the kind of competition that DBS has brought to cable which prompted the cable industry to upgrade itself to the 1,000-channel level, 750-megahertz level, two-way, in order to be able to provide better video services that can compete with the DBS, that made the first step of investment that has made it possible for cable to further upgrade itself to provide broadband Internet and ultimately telephony.

We have seen in the business market CLEC's and data LEC's now competing. But I guess to me what is encouraging is that we are beginning to see the competition come into the residential market. And to me, the key lesson out of all of this is that once you bring a second competitor into the market like DBS which has promoted new behavior out of the cable industry, prompted the cable industry to make investments that had made broadband Internet possible, that then further incited the telephone companies to make the investments in DSL which will create a competitive environment in broadband services.

To me, having at least two players in high-speed broadband Internet access is really the key to having an open network. When I look at the kind of vertical integration that a Time Warner or arguably an AT&T could have, yes, one can easily imagine a situation in which a company like that advantages itself on the content side. But I think when you have got a second real competitor, which DSL is now becoming, out in the marketplace offering the same kind of high-speed at essentially the same price and offering the consumer a broad array of services and a broad array of ISP's—in other words, not only high-speed and my ISP, which is what the cable industry is right now offering, but high-speed and pick your own ISP, which is where DSL is taking the telephone industry—I think in that environment it becomes strategically foolish for the cable industry to continue to have a closed platform.

So I guess my belief is that anything that can be done to encourage both sides to increase their investment and incent each other to compete with each other to offer more and more services and more and more broadband is what you really want to be doing, and you want to get in the way of that investment as little as possible through regulation.

The CHAIRMAN. Thank you.

[The prepared statement of Ms. Kovacs follows:]

PREPARED STATEMENT OF ANNA-MARIA KOVACS

Thank you for giving me the opportunity to appear before you today to discuss the broadband Internet-access market. My name is Anna-Maria Kovacs and I am the telecommunications and broadband services analyst for Janney Montgomery Scott, a brokerage and investment banking firm. My job is to make judgments about the strategies, business plans and financials of firms within the telecommunications and cable industries and to gauge their chances for success in the face of their competitors' strategies and plans, so that I can help our investors pick stocks within this industry.

One of my observations is that the Telecommunications Act is on the verge of bearing the kind of fruit that was hoped for when the Act passed. Meaningful com-

petition in various segments of the telecommunications market has finally emerged, and where it existed before the Act it is taking an increasingly strong hold.

Facilities-based competition against the incumbent telcos is becoming a reality in the consumer as well as business markets. Competition in the business markets was real even before the Act passed. Cable-telephony has been deployed in large enough volume to assure us that competition in residential markets is becoming real, as well. While mass deployment may take a couple of years and another generation of technology, there can be no doubt that it is coming. Video competition has become a reality, with satellite-based services providing real competition to cable. Competition for high-speed Internet access is becoming a reality as well. Cable modems are proliferating and telcos have begun to deploy DSL, with both technologies able to run data at speeds 20 or more times those we have been accustomed to. In the backbone, long-haul segment, several new competitors are creating networks each of which provide more potential capacity than the total current traffic requires. Wireless is beginning to replace wireline.

The major players in each of these segments are trying to play in all segments, as they prepare for a world in which they expect a large part of the market to require bundled services. Thus, they are moving from their traditional areas of strength into new areas, concerned that they will not be able to defend their original position unless they are equally competitive in the other segments. Cable companies have upgraded their video capabilities and moved into data carriage and have begun to move into voice carriage because they see threats to their traditional markets from satellite-based video and need the new sources of growth that Internet access and telephony provide them. Telcos have accelerated their deployment of DSL in response to the threat posed by cable modems, which could decimate the telcos' second-line growth unless the telcos can offer a product that offers competitive speed. The long-distance carriers have moved both into Internet-based value-added services and into local markets, AT&T most notably with its enormous investments in the cable industry. In each case, the presence of a real, facilities-based competitor has spurred the incumbent to move more rapidly to provide new technologies, products and services.

That is an important lesson, in my view, to keep in mind as we look at the Internet access market and concern ourselves with ways to insure that the Internet continues to flourish and that there is unimpeded access to it by both consumers and content providers.

Today, there are two primary ways to access the Internet. The vast majority of users do so over the telcos' networks. Some do so at high speed, most often off corporate networks. Millions of consumers do so at relatively low speed, generally at or below 56 kilobits, though as many as 100,000 consumers may be gaining high-speed access via DSL. The telco network these customers use provides point-to-point connections to any of thousands of ISP's, who in turn provide access to a plethora of websites that hold the actual content the customers want to reach. Slightly under a million consumers reach the Internet over cable networks, at speeds that may reach a megabit or more. They generally have direct access to one Internet Service Provider, @Home or RoadRunner, through whom they may reach other ISP's and the content of the Web. From the consumer's standpoint, today's choices can be roughly described as "low-speed and the ISP of my choice on my telco" or "high-speed and a single ISP on my cable," for a more or less comparable total price of about \$40 for the connection and ISP. Speed vs. ISP of my choice.

That clear-cut choice, however, is blurring. It is becoming possible in more and more locations to get high-speed on the telco via DSL, and @Home has made it possible to access other ISP's through it, albeit at an extra charge. In other words, there are real technologies deployed in the field that make it realistic to expect that within a year or two, most consumers will be able to get high-speed access to the Internet via at least two media, cable and telco-DSL. The ability of cable to offer high-speed is spurring telcos' deployment of comparable speed even though it is not necessarily economic at this early stage in DSL's learning curve. I believe that the deployment of DSL, in turn, will spur the cable industry to insure that it offers consumers a choice in content, content providers, and gateways that is comparable to what the telcos can offer. In other words, I believe that consumers, given a choice of two media which offer equally high speed at comparable prices will select the provider that gives them the content and ISP of their choice. The best guarantee that consumers will enjoy the benefits of broadband and the content of their choice, and that content providers will have access to all consumers, is to do everything possible to encourage both sides to deploy as vigorously as technology, human resources, and capital allow.

Both sides face some barriers on each of those fronts. DSL is a difficult technology to deploy. It is sensitive to distance from the central office as well as to the quality

of the loop, and current versions of it are not compatible with the digital loop carrier that the best modernized telcos have deployed. All of these make it expensive to deploy and account for the slowness with which it has reached the field. Once it is deployed, however, it provides a secure, point-to-point connection whose speed is predictable and controllable. Some of these problems will disappear as new generations of DSL come to market over the next year or two, thus increasing the market that can be physically targeted and lowering the cost of deployment. A factor that will lower deployment cost for both DSL and cable-modems is the appearance of PC's that are DSL-and/or cable-ready. Those have begun to come to market and will help to further lower deployment cost and alleviate the human-resource problem—the shortage of competent technicians who today have to go out and install either cable-modems or DSL directly into the PC. Thus, it is reasonable to foresee that at some point during 2000, DSL deployment will kick into high gear, which I would define as passing the million customer mark that cable-modems are already approaching. By that point, cable companies will have to face the fact that telcos can provide a product that is equally attractive in terms of speed and price to cable-modems. Consumers will no longer face the current choice of speed vs. my favorite ISP, but will be able to get both over DSL.

At that point the pressure will be on cable to open access to its network, a task that faces some real technology barriers. Cable networks are shared pipes. Because they are shared, it becomes difficult to control the actual speed any user will enjoy when multiple users are on-line. @Home and RoadRunner are able to some extent to control bandwidth allocation, to ensure that a few customers do not hog the entire pipe and exclude all others. There is today no network management system that can do that bandwidth-allocation job when many ISP's are providing service over the cable network directly to the end user during periods when the network is carrying a full load. It is likely that such an operating system could be developed for cable networks, but it is not here today. Hence, the cable industry's insistence that other ISP's use @Home or RoadRunner as their gateway to the customer.

There are many who insist that the cable industry is motivated to limit or control access to its network not only by technical difficulties but by anti-competitive motives. The potential for that certainly exists given the vertical integration in this industry and the small number of horizontal players providing local access. It does not take much imagination to envision the potential for a player like AT&T that controls access to the majority of cable homes in the U.S. through its own properties or its affiliates, which is a part-owner of @Home and will be of RoadRunner, and which has a variety of content properties, finding ways to advantage its own content and sites on its own network. But it also does not take much knowledge of history to understand that in a competitive market that is likely to be a highly self-destructive strategy. Consumers who, at comparable prices and speeds, can get unlimited choice of content over the telcos vs. limited choice over their cable network are not likely to opt for the cable network. Beta vs. VHS and Apple vs. Microsoft both tell us that customers primarily care about content and applications and will flock to the vendor that gives them the best and widest selection of each. Thus, if AT&T were inclined to try to limit the number of ISP's and the content on its network, it would be punished severely by the market place, assuming there is another choice in that marketplace. Most Internet access would happen over the telcos' DSL pipes. Given the enormity of AT&T's investment in cable systems and its inability to earn adequately over those systems without a hefty penetration of cable-modems and telephony, its stock would suffer severely if it maintained a closed-access strategy once DSL is readily available in the market-place.

The key, then, to ensuring that the cable industry, and especially AT&T which has invested so heavily in its cable networks, do not act in ways that anti-competitive against ISP's and content providers is to ensure that it has a real competitor at the network level. That is, the key is to ensure that DSL can be deployed as efficiently, economically, and rapidly as possible. That will put pressure on the cable industry to open its network. Ultimately that means creating new cable-network operating systems that allow network capacity control to be distributed among multiple ISP's. In the short run, it may mean reaching agreements with ISP's that enable them to look to the consumer like the primary ISP even when @Home is actually providing the network control.

Regulators can also have some impact on the speed of deployment on each side. On the DSL side, rules that are likely to discourage deployment by the telcos themselves include the requirement that telcos to have separate data subsidiaries, that they provide competitors with a portion of the spectrum on the line on an unbundled basis, that they provide collocation for DSLAM's in already-crowded field-vaults. Each of these makes it operations more difficult and expensive for the telco. On the other hand, each of these facilitates deployment by Data LEC's who ride on the

telco's network. If the primary need is to encourage as much DSL deployment as possible to put pressure on cable operators to open their networks, then the key question in considering such regulations has to be whether more DSL will be deployed by the telcos themselves, if they are left free of regulation, or by the DLEC's, if they are helped by such regulations.

Similarly, regulators can have some impact on cable deployment. It is unlikely that cable will refuse to upgrade its networks in the face of regulation. AT&T, in particular, has already spent so much on buying TCI and will spend so much more on MediaOne, that it has no choice but to upgrade its networks to make as much money as it can on Internet access and telephony. However, regulations that do not take into account actual technological realities could slow deployment. Forcing kluged solutions to allow multiple ISP's direct access to customers before an effective operating system is ready would be one such possibility, because it could increase expense and might degrade service and therefore the marketability of cable Internet access.

How Wall Street allocates capital within this industry, or more simply how stock prices will move, will depend on the development of these various technologies, on the strategies chosen by the various players, and on regulation as well. To focus most specifically on the latter with some examples, minimizing regulations on the telcos is likely to help their stocks, but is likely to hurt the Covads and other Data LEC's who provide DSL over the telco networks. Immediate open-access rules are likely to help the stocks of ISP's other than @Home, and to hurt @Home's as well as to some extent cable stocks. That means that regulators need to be very clear on what their over-riding goals are, and to balance short-term vs. long-term goals. Is it more important to pit telcos vs. cable to ensure that each side is as aggressive as possible right now or is it more important to promote the health of the Data LEC's? Is it critical to ensure open-access on cable today via regulations that might impose extra expenses on cable companies and will probably damage the financial health of @Home, or is it possible to wait and see whether DSL-based competition takes care of the problem? How regulators answer these questions will help determine which companies and industry segments receive support from investors.

The CHAIRMAN. Mr. Kimmelman.

STATEMENT OF GENE KIMMELMAN

Mr. KIMMELMAN. Thank you, Mr. Chairman. On behalf of Consumers Union, publisher of Consumer Reports, we appreciate the invitation, and it is always nice to come back to the Judiciary Committee.

The CHAIRMAN. We are glad to have you back.

Mr. KIMMELMAN. You have heard a lot this morning from esteemed CEO's of companies about the fiber revolution, the explosion in the Internet. And all this has occurred predominantly over a narrowband system, and here we are today talking about the next generation, the broadband system.

What is critical, though, is that what led to that explosion, what led to that enormous takeoff, what led to the importance of the Internet today was the openness of the narrowband system predominantly off of a telephone wire. Today, the broadband system is dominated in its infancy by a much fatter wire, the cable wire, that is not open, and that is a problem.

The cable company guides, steers, decides what to charge, and controls what goes over that wire. It comes out of a totally different set of public policy regulations than the openness of the Internet people have grown to need, want, and want more of.

In this environment, the DSL line that is being described is not the same as the cable line. It is not the same fast speed and it cannot offer the same video programming, the same television programming that Mr. Armstrong's AT&T cable company can offer.

Size is important because in this business you start with a monopoly. It is not like any widget business. You start with a cable

monopoly. It is an infrastructure system which is hard to replicate, as you heard in response to Senator Schumer's question about deregulating everything. And most importantly, it depends on eyeballs, it depends on scope, it depends on advertising revenue, it depends on sales. So it is unique.

When Mr. Armstrong talks about the scope from his point of view and he talks about a little company, if you go and look at his own application with the FCC for his merger with MediaOne, he is not talking about a company that is little and just is worrying about 5-percent stakes in other companies. He is talking about a company that has 90 percent, 85, 75 percent, 50 percent, down to as low as 33 percent in cable companies that do serve 60 percent of all consumers in this country, not 5-percent stakes, 90- to 33-percent ownership stakes.

Now, why is that important? It is not just an issue of how many people sit on the board. The attribution rules come out of the broadcast world, where we cared about open discussion. Did it make sense to have the few broadcasters in the community also own 5 percent of each other? Were they likely to compete head to head and be vigorous presenters of different points of view? No. We set limits on that.

The new broadband world is that same world of open discourse. Will it truly be open to diversity and competition? It is unclear, with the structure that Mr. Armstrong's AT&T is presenting here. This is not 5-percent ownership. This is 33- to 100-percent ownership in companies serving 60 percent of all consumers.

Now, what does this mean for the consumer? Well, the consumer wants broadband services, the consumer wants choices, the consumer wants openness. The consumer wants the Internet we have grown accustomed to. Mr. Armstrong's companies are the companies that have driven up cable rates 3 times faster than inflation, driven up the price of connecting to the Internet, the building blocks of the Internet, connectivity, 3 times faster than the price of the telephone wire, which is supposed to be the alternative. And is two enough? In most markets, it is not.

Mr. Chairman, consumers need changes in policy here to ensure that we truly have open broadband networks, not just one, but multiple networks; that we truly have fair pricing and no discrimination in the building blocks that allow you to communicate, to receive the services you want. So we believe it is time to open up the 1996 Act to stop spiraling cable rates, the \$5 billion in new telephone fees that are on people's bills, and to infuse more competition into this market, preserving the openness of the Internet as we enter this broadband era.

Thank you.

The CHAIRMAN. Well, thank you.

[The prepared statement of Mr. Kimmelman follows:]

PREPARED STATEMENT OF GENE KIMMELMAN

I. INTRODUCTION

Consumers Union¹ believes it is time for Congress to address the competitive shortcomings of the Telecommunications Act of 1996.² With cable television rates soaring and many telephone charges on the rise, the majority of consumers are not receiving the benefits that Congress promised through elimination of traditional ownership and price regulation in telecommunications markets. And massive consolidation among telecommunications and cable companies is threatening development of competition and fair pricing for new services that rely on the telephone or cable wire, like high-speed Internet access.

So long as local telephone and cable companies face limited competitive threat in their core service markets, and their wires remain the most viable transmission systems for broadband, high-speed Internet services, consumers are in danger of monopolistic abuse. Strict antitrust enforcement, careful regulation, and legislation to correct flaws in the 1996 Telecommunications Act are needed to open the door to broad-based competition.

II. RISING PRICES IN TODAY'S MARKET

Contrary to the goals of the Telecommunications Act, consumers face rising prices and extremely limited competitive choice for numerous television and telephone services. Since passage of the Act in February 1996, cable TV rates have risen about 23 percent, more than three times the rate of inflation during that period.³ Despite significant growth in the satellite industry, the high price of purchasing a satellite dish, expensive installation charges and the inability to provide local broadcast signals have enabled cable to avoid price competition from satellite providers. On the other hand, the few consumers who have a choice of cable service from two providers (head-to-head competition from two cable companies or one cable and one telephone company) receive approximately the same programming, new services and infrastructure upgrades for about 14 percent less than cable monopolies charge.⁴ If cable monopolies were limited to charging these competitive prices throughout the country, consumers would save about a \$4 billion a year.

The picture for some telephone rates is starting to look almost as bad as for cable. Federal Communications Commission (FCC) pricing policies have resulted in new "line-item" charges on phone bills that will cost consumers almost \$5 billion a year. New universal service fees, subscriber line charges, federal access fees, and number portability charges are requiring the average single-line customer to pay about \$3.00 per month more, and consumers with two lines at least \$7.00 per month more for phone service, before they place a call. These figures do not include new monthly minimum charges assessed by long distance companies like AT&T and MCI, which require consumers to pay \$3.00 to \$5.00 a month even if they make no calls. While large-volume long distance users are finding competitive options and declining per-minute prices, consumers who make less than 30 minutes of interstate long distance calls per month have seen their rates double since passage of the Act.⁵

III. MARKET CONCENTRATION

Failure of our antitrust authorities to take an aggressive stance against telecommunications and cable mergers has contributed to a bleak picture for the development of local telephone, cable, high-speed Internet access, and increased long dis-

¹ Consumers Union is a nonprofit membership organization chartered in 1936 under the laws of the State of New York to provide consumers with information, education and counsel about good, services, health, and personal finance; and to initiate and cooperate with individual and group efforts to maintain and enhance the quality of life for consumers. Consumers Union's income is solely derived from the sale of *Consumer Reports*, its other publications and from non-commercial contributions, grants and fees. In addition to reports on Consumers Union's own product testing, *Consumer Reports* with approximately 4.5 million paid circulation, regularly, carries articles on health, product safety, marketplace economics and legislative, judicial and regulatory actions which affect consumer welfare. Consumers Union's publications carry no advertising and receive no commercial support.

² Public Law 104-104, 110 Stat. 56 (1996).

³ Bureau of Labor Statistics Cable Consumer Price Index and Consumer Price Index—All Urban Consumers.

⁴ In the Matter of Implementation of Section 3 of the Cable Television Consumer Protection and Competition Act of 1992, REPORT ON CABLE INDUSTRY PRICES, MM Dkt. No. 92-266, May 7, 1999, at 3.

⁵ Industry Analysis Division, Common Carrier Bureau, Federal Communications Commission, REFERENCE BOOK OF RATES, PRICES, INDICES AND EXPENDITURES FOR TELEPHONE SERVICE, June 1999 at Table 2.4.

tance competition. The Justice Department's Antitrust Division is in the process of allowing six of the eight big local telephone companies (GTE and the Bell Companies) to merge into two giant super-regional monopolies. After gobbling up Pacific Telesis and Ameritech, SBC will control about one-third of all telephone lines into consumers' homes. Similarly, with the acquisition of NYNEX and GTE, Bell Atlantic will control another third of the country's local phone lines. These were the companies that, during consideration of the Telecommunications Act, claimed they would be "seven new competitors" in long distance and other markets.

In response to this massive local telephone consolidation, AT&T has purchased substantial ownership stakes in cable television companies that serve about 60 percent of all households in the country. Through its merger with TeleCommunications Inc. and proposed purchase of MediaOne, AT&T will dominate not only the majority of cable wires, but also the major high-speed Internet access providers (@Home and Roadrunner) and control more than 60 cable television channels.⁶

To avoid antitrust and regulatory scrutiny, AT&T has attempted to divert attention from its minority ownership stakes in a vast universe of cable properties, TV channels, cable set-top box developers, and Internet service providers. See Exhibit 1. However, even with recent sales of some cable assets,⁷ AT&T's excessive market power in cable TV and related markets requires massive antitrust and regulatory surgery to prevent inflated consumer prices and barriers to competition. See Exhibits 2-5.

Despite AT&T's stated goal of expanding its cable business into the local telephone market, the fact that the underlying cable monopoly is not subject to any limits on pricing (unlike the local telephone monopoly) and is not subject to common carriage/nondiscrimination requirements (unlike the local telephone monopoly), makes this consolidation particularly troubling. For consumers, AT&T's promise to try to compete in the local telephone business in the future is not worth today's skyrocketing cable rates and discrimination in new Internet services. And AT&T's preferential deal with Microsoft to install Windows CE in cable set-top boxes could put a damper on competition for the equipment that accompanies broadband services.

It is important to note that, while everyone expects the telephone and cable wires some day to offer the same set of services in competition with each other, they do not compete today! Without enormous infrastructure investments, elimination of technical barriers, and experimentation with network management of bundled services, cable and local telephone companies cannot effectively compete against each other. And no one else is even close to them, measured either by technical or financial standards, to serve as a mass market competitor for the most important telephone, television and Internet services. We may therefore be experiencing an enormous consolidation that, at best, yields a duopoly. What does this mean for consumers?

IV. THE DIGITAL DIVIDE

In a report we released with the Consumer Federation of America in February,⁸ we found that at least one-half and as many as three-quarters of all consumer do not generate enough revenue opportunity—because of their small local, long distance, wireless, cable and Internet consumption—to be attractive to the companies seeking to expand into these markets. This fact is unlikely to change in the foreseeable future. Therefore all the talk of deregulation designed to spur investment in new infrastructure and advanced services may do little or nothing for the needs and desires of the vast majority of the consumer market. Our report demonstrates that cable, local phone and long distance companies are only likely to compete for the top 20 percent of the consumer market. Market forces are not strong enough to prevent a growing world of telecommunications haves and have-nots.

IV. IT IS TIME FOR CONGRESS TO ACT

If neither antitrust officials nor the FCC are willing to stop the telecommunications consolidation juggernaut, it is imperative that Congress step in to establish comparable public obligations for the two wires that may some day be in a position

⁶In the Matter of Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, FIFTH ANNUAL REPORT, CS Dkt. No. 98-102, Dec. 23, 1998 at Appendices C and D.

⁷Leslie Cauley, "AT&T Realigns Cable-TV Empire with Cox Deal," *Wall Street Journal*, July 8, 1999.

⁸Dr. Mark Cooper and Gene Kimmelman, "The Digital Divide Confronts the Telecommunications Act of 1996," Consumers Union and Consumer Federation of America, February 1999.

to compete for the most important telecommunications, Internet and television services. We believe the Telecommunications Act should be adjusted to:

- (1) protect against inflated pricing of monopoly telephone and cable services;
- (2) ensure that monopoly telephone and cable services do not subsidize other services;
- (3) prevent either telephone or cable companies that have market power as a result of their transmission facilities from discriminating in any way against consumers or independent vendors who must rely on those companies' transmission facilities to offer services (e.g., cable channels, Internet access) or equipment (like cable set-top boxes) to the public; and
- (4) ensure that low-volume telecommunications users (including long distance customers) are not overcharged for their limited communications needs.

Consumers Union supports preservation of the portions of the 1996 Telecommunications Act that will open local phone markets to competition. We believe that efforts to enhance deployment of broadband facilities by local phone companies must coincide with, and not replace efforts to open the local telephone market to competition. And where competition does not develop, Congress must also ensure that prices for the local phone service that connects Internet and other broadband applications remain reasonable and affordable to all consumers.

Rather than focus on distinctions between services—data, voice, video—that are disappearing, we suggest a different basis for revisiting the Act. It is now obvious that modest users of virtually all communications services—local phone, long distance, cable, Internet—are unlikely to benefit from the deregulatory, market opening provisions of the 1996 Act. In the foreseeable future, competition will not penetrate these low-volume markets, either for individual services or a bundle of these services combined. We therefore suggest modifications to the Act that ensure reasonable prices for local telephone, cable and long distance services where competition does not exist or is insufficient to keep prices down. Consumers will only receive the maximum benefit of new broadband Internet services if the prices for the building blocks these services depend upon—telephone and cable services—are reasonable.

VII. CONCLUSION

Consumers Union urges swift action to correct the flaws in the 1996 Telecommunications Act. As consumers experience spiraling cable rates, rising monthly telephone charges, and the restricted choices that result from massive industry mergers, it is obvious that the Act is not meeting its competitive goals. Either massive cable and telephone industry consolidation must be blocked, or new consumer protection policies implemented to ensure reasonable prices and maximum choice for high-speed Internet access, cable and telecommunications services.

EXHIBIT 1

AT&T'S SELF-PROTRAIT AS A "NOT TOO BIG" CABLE COMPANY

**BY IGNORING PARTIAL OWNERSHIP AND ATTACKING THE FCC'S
ATTRIBUTION RULES, AT&T HOPES TO AVOID SERIOUS QUESTIONS
ABOUT MARKET CONCENTRATION**

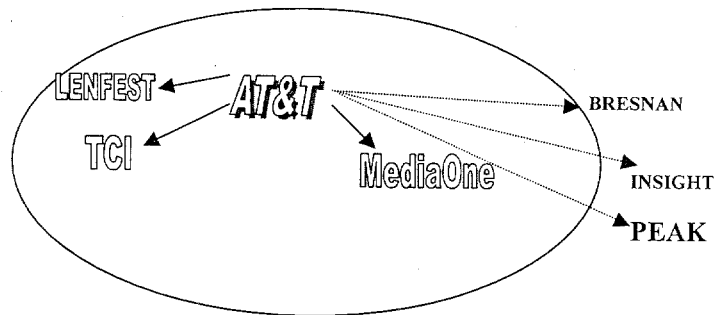
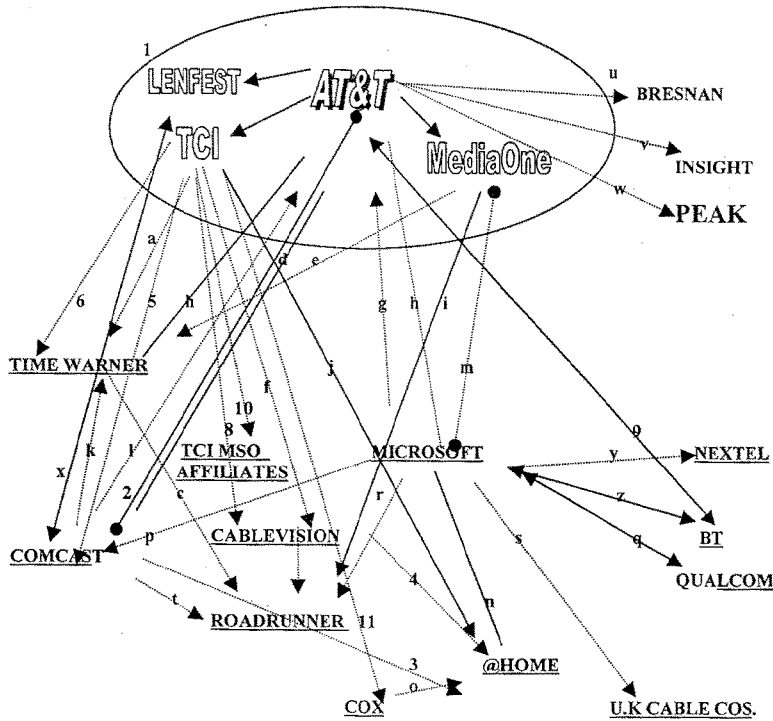


EXHIBIT 2

**AT&T'S DIGITAL CONGLOMERATE
AT THE HEART OF A BROADBAND OLIGOPOLY**

WITH FINANCIAL AND OPERATIONAL RELATIONSHIPS IDENTIFIED



LEGEND:

- STOCK OWNERSHIP: MAJORITY ———> ; MINORITY - - - ->
- JOINT VENTURE: <====>
- USE DEAL: EXCLUSIVE ——— ; PREFERRED - - - -
- SWEETENERS ● - - - - ●

DESCRIPTIONS OF RELATIONSHIPS AND IDENTIFICATION OF SOURCES:

- 1 = wholly owned subsidiaries (2)
- 2 = \$1.5 billion breakup fee (10)
- 3 = large minority (12); 12% (16)
- 4 = (6) (15)
- 5= QVC Joint venture (16)
- 6 = Programming joint venture through Liberty (22); 10% (16)
- 7 = Wholly owned (?) (16)
- 8 = Programming joint venture through Liberty (22); Investment (19)
- 9 = (20)
- 10 = TCI MSO Joint ventures (4)
- 11 = Programming joint venture through Liberty (22)

- a = 10% Ownership of Time Warner (23)
- b = exclusive deal for telephony (6)
- c = 25% (6)
- d = exclusive deal for telephony (5)
- e = 26% (1)
- f = 25% (1) (4)
- g = 3% ownership (3) (5)
- h = up to ten million set tops guaranteed (3)
- i = Majority (5); 25% (6)
- j = 39% (6)
- k = 25% (6)
- l = exchange of systems is likely to be consummated with a stock swap (2)
- m = Microsoft gets to buy MediaOne's European cable systems (9)
- n = Windows NT in @Home solutions network (13)
- o = Minority (6)
- p = 11% ownership (5) (12)(17)
- q = wireless Internet (8)
- r = Through Comcast (5)(12); Direct (18); 10% (16) (20)
- s = 5% NTL, 30% Telewest, 30% Cable&wireless (14)
- t = Minority (5)(12)
- u = 49% (1)
- v = 34% via MediaOne (1)
- w = Majority (1)
- x = Manager of AT&T owned systems (7) (11)
- y = 4% (8)
- z = wireless Internet (8)

SOURCES:

- (1) "AT&T Household Reach to be Issue in MediaOne Merger Review," Communications Daily, May 10, 1999.
- (2) "War Ends: AT&T and Comcast Cozy up in Solomon-Like Deal," Broadband Daily, May 5, 1999.
- (3) "AT&T Comes Out on Top in Microsoft Deal," Broadband Daily, May 10, 1999.
- (4) "FCC to Scrutinize AT&T MediaOne Deal," Broadband Daily, May 10, 1999.
- (5) "AT&T Poised to Regain Long Reach, Via Cable," Washington Post, May 5, 1999.
- (6) "AT&T Goes Cable Crazy," Fortune, May 24, 1999.
- (7) AT&T Chief's \$120 Billion Plan Capped by Deal for MediaOne," Washington Post, May 6, 1999.
- (8) "Microsoft to Buy A Stake in Nextel," Washington Post, May 11, 1999
- (9) Allan Sloan, "AT&T-MediaOne Soap Opera Has Just About Everything," Washington Post, May 11, 1999.
- (10) "Pact Ends MediaOne Bid War," Washington Post, May 6, 1999.
- (11) "Comcast, in AT&T Accord, Abandons MediaOne Bid," Wall Street Journal, May 6, 1999.
- (12) "As Worlds Collide, AT&T Grabs Power Seat," Wall Street Journal, May 6, 1999.
- (13) "Microsoft, @Home Make Broadband Pact," ZDNet, May 13, 1999.
- (14) "A Contest Is On In Britain to Revolutionize Cable TV," New York Times, May 13, 1999.
- (15) Schiesel, Seth, "Concerns Raised as AT&T Pursues a New Foothold," New York Times, May 6, 1999.
- (16) Fabrikant, Geraldine and Seth Schiesel, "AT&T Is Seen Forging Link to Microsoft," New York Times, May 6, 1999.
- (17) Markoff, John, "Microsoft Hunts Its Whale, the Digital Set-Top Box," New York Times, May 10, 1999.
- (18) "ACTV Gets Boost from Liberty Digital," Broadband Daily, May 17, 1999.
- (19) Wolk, Martin, "Microsoft Poised for major Role in New Industry," Reuters, May 6, 1999.
- (20) Fabrikant, Geraldine and Laura M Holson, "Key to Deal for MediaOne: Keeping the Losing Bidder Happy," New York Times, May 6, 1999.
- (21) Federal Communications Commission, In the Matter of Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, CC Docket No. 98-102, Fifth Report, Table D-6.
- (22) Federal Communications Commission, In the Matter of Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, CC Docket No. 98-102, Fifth Report, Table D-1.

EXHIBIT 3**AT&T'S CABLE, BROADBAND, TELEPHONE REACH**

**AT&T'S ACQUISITION AND CONTROL OF CABLE VIOLATES DOJ MERGER
GUIDELINES AND FCC OWNERSHIP GUIDELINES WHILE ITS EXCLUSIVE
MARKET COVERAGE WILL MAKE IT IMPOSSIBLE FOR COMPETITORS TO
GAIN ACCESS TO ENOUGH HOMES TO BE VIABLE**

SYSTEM	MILLIONS OF HOUSEHOLDS	
	SUBSCRIBERS	HOMES PASSED
TCI OWNED AND OPERATED	11.4	16.52
TCI NON-MANAGED SUBSIDIARIES	.5	.72
TCI JOINT VENTURES WITH EQUITY	1.92	2.79
OTHER TCI JOINT VENTURES	1.20	1.74
TCI-CABLEVISION EQUITY	3.50	5.07
MEDIAONE	5.0	7.25
TIME WARNER-MEDIA ONE JOINT VENTURE	12.00	17.39
LENFEST	2.00	2.90
TOTAL	35.62	51.48
LESS COMCAST NET GAIN	2.00	2.90
TOTAL ATTRIBUTABLE	33.62	48.58
COMCAST	8.00	11.60
TOTAL IN CONGLOMERATE	41.62	60.18
TOTAL HOUSEHOLDS	70.00	94.00
AT&T PERCENT	59	64

SOURCES: Federal Communications Commission, In the Matter of Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, CC Docket No. 98-102, Fifth Report, December 1998, Table D-3, D-5.

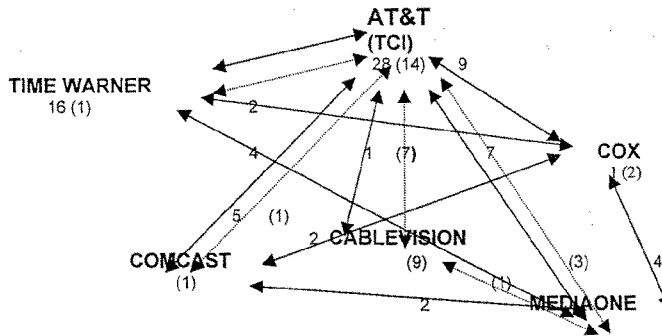
"FCC to Scrutinize AT&T MediaOne Deal," Broadband Daily, May 10, 1999.

"AT&T Household Reach to be Issue in MediaOne Merger Review," Communications Daily, May 10, 1999.

EXHIBIT 4

**HORIZONTAL CONCENTRATION AND VERTICAL INTEGRATION
OF CABLE TV PROGRAMMING**

**THE DIGITAL CARTEL DOMINATES NATIONAL AND REGIONAL
PROGRAMMING**



Numbers under the company name indicate majority ownership stakes only
 Numbers in parentheses indicate regional programming
 Other numbers indicate national programming
 Joint ventures in national programming ↔
 Joint ventures in regional programming - - - - - ↔

SOURCES: Federal Communications Commission, In the Matter of Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, CC Docket No. 98-102, Fifth Report, December 1998, Table D-3, D-5.

EXHIBIT 5**DISTRIBUTION SYSTEM OWNERSHIP OF CABLE TV PROGRAMMING**

LED BY AT&T (TCI) THE DIGITAL CARTEL DOMINATES THE MOST POPULAR
NATIONAL AND REGIONAL PROGRAMMING

NATIONAL PROGRAMMING

MAJOR MSO OWNER/ OTHER MSO OWNER (OTHER SHARE)	PROGRAM (MAJOR OWNER SHARE)	NUMBER OF SUBSCRIBERS (MILLIONS)
TCI	USA (19)	74
	DISCOVERY (49)	74
	TLC (49)	65
	BET (35)	54
	HOME SHOP (19)	53
	PREVUE (44)	50
M1 (1)	SCI-FI (19)	50
COX (25)	ANIMAL PLANET (49)	41
	SNEAK PREVIEW (12)	36
	FX (50)	36
	ODYSSEY (33)	30
	BOX WORLDWIDE (78)	27
	ENCORE (100)	22
	TELEMUNDO (50)	18
COX (25)	TRAVEL (49)	18
	KALEIDOSCOPE (12)	15
	HSN SPREE (10)	12
COX (12)	CBS EYE ON (25)	11
	FiTV (50)	11
	FOX AMERICAS (25)	9
	ACTION PPV (35)	8
	STARZ (100)	8
	INTL CHANNEL (90)	8
	FOX DIRECT (50)	5
	BET JAZZ (35)	4
	BET MOVIES (81)	4
	FOX WORLD (50)	1
COX (25)	BBC AMERICA (49)	*
	CANALES n (100)	*

MAJOR MSO OWNER/ OTHER MSO OWNER (OTHER SHARE)	PROGRAM (MAJOR OWNER SHARE)	NUMBER OF SUBSCRIBERS (MILLIONS)
COX TIME WARNER (17) TCI (10) MEDIA1 (10)	VIEWERS CHOICE (20)	19
TCI (16) COMCAST (8) MEDIA1 (8)	SPEEDVISION (33)	15
TCI (16) COMCAST (8) MEDIA1 (8)	OUTDOOR LIFE (33)	14
	GEMS (50)	11
	PRODUCT INFO (45)	8
MEDIA1 TIME WARNER (1) COX (1)	FOOD (5)	33
	GOLF (14)	17
COMCAST TCI (43)	QVC (57)	67
TCI (10) MEDIA1(10)	E! (40)	50
TCI (10) MEDIA1(10)	STYLE	*
TIME WARNER TCI (10)	TBS (100)	74
TCI (10)	CNN (100)	74
TCI (10)	TNT (100)	73
TCI (10)	CNN HEADLINE (100)	69
TCI (10)	CARTOON (100)	51
TCI (10)	COMEDY CENTRAL (50)	51
TCI (10)	CINEMAX (100)	32
	COURT (50)	34
TCI (10)	TURNER CLASSIC	28
TCI (10)	CNN SI (100)	6
TCI (10)	CNN INTL (100)	3
TCI (10)	CNN Fn (100)	2
CABLEVISION	AMC (75)	69
TCI(25)	FOX SPORTS NET (83)	57
	BRAVO (75)	35
	MUCHMUSIC (75)	19
	INDEPENDENT FILM (75)	15
	ROMANCE CLASSIC (75)	14

REGIONAL PROGRAMMING

MAJOR MSO OWNER/ OTHER MSO OWNER (OTHER SHARE)	PROGRAM (MAJOR OWNER SHARE)	NUMBER OF SUBSCRIBERS (MILLIONS)	
TCI	BAYTV (49)	*	
	FOX SPORTS AZ (50)	*	
	" BAY (35)	*	
	" DETROIT (50)	*	
	" INTERMTN WEST (50)	*	
	" MIDWEST (50)	*	
	" NORTHWEST (50)	*	
	" PITTSBURGH (50)	*	
	" FOCKY MTN (50)	*	
	" SOUTH (44)	*	
	" SOUTHWEST (50)	*	
	" WEST (50)	*	
	" WEST2 (50)	*	
	" HTS (17)	*	
COMCAST (16) M1 (8) COX (5)	SUNSHINE NETWORK (27)	*	
COMCAST	CN8 (100)	*	
	COMCAST SPORTS (46)	*	
CABLEVISION	MSG METRO GUIDE (100)	*	
	MSG TRAFFIC (100)	*	
	NEIGHBOR NEWS LI (75)	*	
	NEW 12 CT (75)	*	
	NEWS 12 NJ (75)	*	
	NEWS 12 LI (75)	*	
	NWS 12 WESCHESTER (75)	*	
	MSG METRO LEARN (100)	*	
	FOX SPORTS PACIFIC (45)	*	
	TCI (19)	" NEW YORK (42)	*
	TCI (35)	" CHICAGO (45)	*
	TCI (20)	" CINCINATTI (45)	*
	TCI (20)	" OHIO (45)	*
	TCI (18)	" MADISON SQ GARD. (42)	*
TCI (6)	SPORTS CHNL FLA (14)	*	
MEDIAONE	MEDIAONE (100)	*	
	NEW ENGLAND NEWS (50)	*	
CABLEVISION (23) TCI (10)	FOX SPORTS NEW ENGLAND (50)	*	
TIME WARNER	NEW YORK NEWS 1	*	

NOTES: * Indicates counted elsewhere or unknown.

Discovery counts as 6 programs, Encore counts as 7, Starz counts as 2, Cinemax counts as 6 and Court counts as 3.

Subsequent to the publication of the FCC annual report, TCI transformed its ownership in many individual Fox network programs into ownership of stock (i.e. Fox bought out TCI by giving it stock). While this diminished TCI's ownership share of individual programs, it spreads TCI interest in Fox to many more programs. Since TCI also owns a large part of Cablevision, it also holds direct interests in the individual programs Cablevision jointly owns with Fox.

SOURCES: Federal Communications Commission, In the Matter of Annual Assessment of the Status of Competition in Markets for the Delivery of Video Programming, CC Docket No. 98-102, Fifth Report, December 1998, Table D-5.

The CHAIRMAN. Mr. Moore, we will take your testimony.

STATEMENT OF KEVIN M. MOORE

Mr. MOORE. Thank you, Mr. Chairman, for the opportunity to present before your panel today. First of all, I would like to begin by saying that we believe ultimately the issues faced by the committee are ones of public policy. However, we are encouraged by the committee's interest in Wall Street's view on the subject, since Wall Street typically has a very significant effect on the behavior of the participants. In my written testimony, I submitted 10 observations from one Wall Street analyst's perspective. I will summarize six of them here in the interest of time.

First, from our standpoint, we are not expecting significant leadership and innovation from the RBOC's. Over the last 5 to 10 years, their record has been dismal, including such faux pas' as ISDN, as well as a full-service network. We are looking for mainly new providers, including in that category AT&T to be the source of most of the innovation in the industry.

Second, we believe that AT&T is incentivized to open up its cable plant to ISP's and to others. I think the logic is fairly clear here. AOL and others will be customers of someone's local network, and I think it would be in AT&T's best interest in the long term for that local network utilized by AOL to be its own.

Third, one of the issues facing the committee in consumer access is that Wall Street has typically favored business-oriented communications models. In other words, they favored companies in B-to-B businesses over those in consumer businesses. Typically, it has required a monopoly or semi-monopoly type situation, such as cable or @Home, to really cause a widespread endorsement by Wall Street.

Next, Wall Street has typically favored small companies to carry out innovation. In some cases, that has actually hurt both the RBOC's as well as AT&T because the investments in broadband and other new services often require them to dilute their earnings, and they are often penalized for doing so. Obviously, this is something we would like to improve from a Wall Street perspective, but it is a reality which I think the committee should understand in the behavior of the participants.

Next, I think Wall Street is looking for Wall Street-friendly legislation. I think Mike Armstrong mentioned it today when he said that we are looking for stability and consistency. I don't believe that we got that out of the 1996 Telecom Act, and it may have prematurely limited funding for some of the CLEC's, as the amount of litigation made it clear that this was not going to be a slam dunk for the new players.

However, I do believe that the telecom bill has been somewhat successful in promoting broadband competition. We would note that while many lament the fact that less than 5 percent of the access lines in the voice world are now competitive, this year we estimate that 15 percent of all the DSL lines—at least 15 percent will be installed by new players and not by the incumbent providers. So the new providers are doing roughly 3 times better in data than they are in voice in terms of a market share perspective.

Finally, I would like to say that even though we are not counting on the RBOC's for leading the pace of innovation, we do believe that it is important from a raw resource and capacity standpoint that they are engaged and are able to provide the services that ultimately consumers want. However, we do not believe that the fact that the RBOC's have fallen behind in broadband access relative to the cable providers has anything to do with regulation, and we would encourage the committee to focus on providing strong, competitive incentives for other competitors to force the RBOC's into providing similar type services as opposed to regulating the competitors or in some way inhibiting them.

Thank you.

[The prepared statement of Mr. Moore follows:]

PREPARED STATEMENT OF KEVIN M. MOORE

Mr. Chairman and Committee members, thank you for the honor of testifying before your Committee hearing on "Broadband: Competition and Consumer Choice in High-Speed Internet Services and Technologies". I am Kevin Moore, a senior telecommunications analyst and Director at Deutsche Banc Alex. Brown. Deutsche Banc Alex. Brown is an investment banking firm focused on middle market companies in industries experiencing high levels of growth and/or change. I believe that we would all agree that the telecommunications industry fits this category. However, the views expressed here are mine alone. My primary job is to forecast the growth and earnings and stock performance of selected companies within the telecom industry. While my coverage list includes the largest companies, such as the Regional Bell holding companies (RBOC's), AT&T and WorldCom, it also includes Internet Service Providers, Web Hosting, Digital Subscriber Line (DSL) and other Internet infrastructure companies. In addition, I assist our investment bankers in raising capital for emerging growth companies and have personally been involved in over \$4 Bn in financing over the last four years including capital raised for the first public ISP (NetCom Online Communications) and the first public DSL Service Provider (COVAD Communications). In terms of our current industry position, we are bullish on AT&T, WorldCom and all of the Internet Infrastructure plays. We are generally bearish on the RBOC's with the exception of BellSouth, which we recommend with a buy rating.

For the record, I would also like to advise the committee that other companies that are important in the current debate such as AOL, @Home and the Cable Industry are covered by my colleagues Shaun Andrikopoulos, Lawrence Marcus and Doug Shapiro. Additionally, I co-cover AT&T with Stuart Conrad. None of these colleagues are present here today.

I would like to begin with some brief comments and leave maximum time for questions and answers. We believe that ultimately the issues faced by the committee are ones of public policy, however we would like to submit 10 industry observations from the perspective of "Wall Street" which we hope will be helpful framing the issues and the potential solutions.

1. WE BELIEVE THAT THE INTERNET AND TELECOMMUNICATIONS ARE NO LONGER SEPARATE INDUSTRIES

We believe that the acquisition of the largest ISP, UUNET, by the CLEC MFS communications in 1996 was a landmark event in the industry that marked the beginning of the convergence of the Internet and Traditional Telephony, which we believe ultimately as brought us to the current debate. We outlined our beliefs about the new world order in a theme piece called "Dawn of the Multimedia Communications Services Model." Copies of this piece have been provided for the Committee. Three years later, industry pundits believe that as much as 95 percent of the traffic on the World's communications networks will be Internet traffic within 10 years. The bottom line is that 95 percent of the world's legislation/regulation is currently oriented to what will be 5 percent of the world's traffic. Therefore we expect the issues of broadband, data and the Internet to dominate the regulatory debate, with voice increasingly taking a back seat. While we are not recommending increased regulation of the Internet, we believe that consumer interests will be better served by more focus on the Internet. The last several years of debate and litigation around reciprocal compensation for ISP's illustrates the amount of energy and resources that can be wasted when regulatory policies do not consider the Internet.

2. VIABLE LOCAL BROADBAND IS ONE OF THE MOST IMPORTANT ISSUES IN COMMUNICATIONS/COMPUTING/MEDIA

We believe that the impact of the current debate extends well beyond the telecommunications industry. The “bottleneck” in the local loop could be negatively impacting the future growth of the computer as well as the media industry. As we saw the proliferation of PC’s with the advent of the corporate LAN, or local area network, we believe that broad proliferation of broadband local could set off a new round of software and hardware growth in the computer industry as vendors take advantage of the possibilities enabled by “always on” connectivity. From the consumer standpoint, we expect the high speed Internet to extend beyond the current perceived role as “entertainment” to a critical delivery mechanism of everything from government and public services to medical and education services. The possible implication is that given the importance of ensuring that deployment of broadband takes place, regulators may have to avoid policies which seemingly are “technically” procompetitive but which would stifle investment and make dampen overall growth in the industry. We believe that current investor sentiment (rightly or wrongly) is that highly regulated open cable access would dampen investment in cable as broadband alternative.

3. WE’RE NOT EXPECTING SIGNIFICANT INNOVATION FROM THE RBOC’S

We believe that there is little historical precedence to support a thesis of RBOC’s innovation. At best they will be fast followers and at worst they could actively inhibit the deployment of new technology. From MCI to WorldCom and cable modems, history has shown that the most significant innovations in telecommunications have come from outside the Bell System. However, the record of RBOC innovation is scattered with no action and grossly failed attempts such as ISDN and the “Full Service Network.” We believe that it is the success of the cable modem that is causing the current wave of RBOC investment in DSL services. We believe that legislators/regulators should take this history into account as they weight polices that may stifle small company investment because the policy may be perceived favorable to the RBOC’s. We believe that the primary reason for lack of innovation is that ultimately, every new innovation either creates opportunities for RBOC competitors and/or cannibalizes existing services, neither of which is good for the RBOC’s.

4. WE BELIEVE AT&T IS INCENTIVISED TO OPEN THE CABLE PLANT TO THE ISP’S AND OTHERS

We believe that AT&T will, as it has stated, open up its cable plant to other players. The incentives for it to do so are rather clear. First, companies such as AOL and others will be a major customer of some local company. We believe that AT&T would rather have the online providers utilizing its facilities instead of someone else’s. Second, while counter to traditional RBOC and even traditional AT&T thinking, a company wholesaling its network to increase network utilization is a very financially viable strategy. It has often been successfully utilized by emerging players such as WorldCom. While we doubt that either the RBOC or AT&T will ever wholesale their respective networks to the full satisfaction of third parties (or each other), we do believe that, as they offer more advanced (and financially risky) services, both parties will be increasingly incentivised to be more wholesale friendly.

5. WALL STREET FAVORS BUSINESS ORIENTATED COMMUNICATIONS SERVICES MODELS

With a few exceptions, Wall Street has tended to favor business-oriented business models both in traditional telecommunications as well as the Internet. Only monopoly (e.g., cable TV), and semimonopoly (e.g., @Home) situations, have been attractive enough to attract widespread investment. Key detractors from residential investment appear to be the greater propensity for price-based competition and the lower concentrations of revenues. As a result, with the exception of AT&T/Cable Companies and the RBOC’s, both of which have existing consumer franchises and facilities, we do not currently see significant investment in residential broadband facilities. Consequently, we expect these two players provide the greatest prospects for broadband to the home.

6. WALL STREET FAVORS SMALL COMPANY INNOVATIVENESS

Wall Street is more willing to provide capital for smaller companies to innovate than it is for larger companies. This partially contributes to why larger companies are less likely to innovate. Not only do their efforts often go unrewarded, they are sometimes punished as the dilative impacts of their investments negatively affect the bottom line. This suggests that “Wall Street” may be slowing the efforts of both

the RBOC's and AT&T/cable companies in bring broadband to the home. However, the "Street" continues to be interested in funding new upstarts who will eliminate bottlenecks in the existing communications infrastructure. This year investors have answered the call to open the "local bottleneck" by eagerly funding three new DSL providers: COVAD, Rhythms and NorthPoint. Although these companies focus mostly on business customers, they provide services to residential users through telecommuting applications and are exploring general consumer offerings. While they may not have the critical mass of the RBOC's and AT&T, "Wall Street's" willingness to actively fund their innovations makes them vitally important to moving the broadband "ball" ahead even when the bigger players would tend to be more cautious.

7. "WALL STREET" FRIENDLY LEGISLATION/REGULATION WILL PROMOTE INVESTMENT

The number one criteria that the "Street" is interested in from legislation/regulation is stability and certainty. Investors were particularly disillusioned by the uncertainty caused by the ease with which the Telecom bill of 1996 was easily derailed by RBOC lawsuits less than a year after it was passed. We believe that this regulatory uncertainty contributed significantly to the substantial decline in CLEC stock prices in the spring of 1997. While there were other contributing factors, we believe that this ultimately resulted in the premature end of CLEC funding and therefore a reduction in amount of facilities-based competition. The key takeaway here is that maximum "Wall Street" investment will occur in environments where regulation is stable for at least three to five years.

8. TELECOM BILL HAS HELPED ACCELERATE BROADBAND COMPETITION

While it is easy to look at the limited levels of competition in the local loop three years after the 1996 telecom act, we would argue that the glass is half full and not half empty. Particularly as it relates to the deployment of local broadband the results have been encouraging. While the traditional CLEC's are expected to still have less than 5 percent access line market share in 1999, we expect the independent DSL lines to have at least 15 percent market share of the estimated 700,000-800,000 DSL lines that will be services. The implications are that the Act may be doing much better in facilitating data/broadband competition, which as we have mentioned is the most important area going forward, than it has for the voice services that it was nominally designed for. We view this as a success and believe that the key to bringing competition to telecommunications will be with ensuring that the next generation services are competitive.

9. RBOC'S HAVE INSUFFICIENT INCENTIVE TO OPEN THE LOCAL LOOP

We believe that the RBOC's actions since the Telecom act was passed demonstrate that there was little "true" incentive to force them to quickly open the local loop to competitors. However, we believe that their actions were rational. First, opening up the local market is expensive in terms of the direct cost of systems alone. Second, the RBOC's already have access to the most profitable portion of long distance, access charges. Third, the incremental prospect of lost customers due to not having long distance is, in our opinion still small. In this environment, long distance is nice to have and should be pursued over the long term but not of urgent importance. Consequently, while the competitive environment somewhat changes this outlook, we doubt that any legislative/regulatory strategy based solely on motivating the RBOC's through the long distance industry will yield fast enough results to meet incredible demand for broadband services.

10. RBOC'S MUST ULTIMATELY BE ABLE TO PROVIDE SERVICES FOR THERE TO BE WIDESPREAD ROLLOUT

Despite our less optimistic outlook on the ability for the RBOC's to lead innovation, we do believe that they are a key element to the widespread deployment of any new technology including broadband. The reason is simple: they have greatest amount of telecommunications manpower and resources. In fact, we believe that for the foreseeable future they will be the largest providers of both voice and data communications services. As a result it is important to ensure that the RBOC's are participants. However, we do not believe that RBOC's are materially disadvantaged by the current regulatory structure or that any unfair advantage of the cable companies has led to the substantial lead that cable modems has over RBOC DSL deployment. So, in our opinion, to maximize the consumer broadband, the challenge for legislators and regulators is to create a stable regulatory environment that will spur innovation and investment by competitors to the size where the RBOC's no longer

have the option to lag behind. In our opinion, with less than 1 percent of households and/or businesses expected to have broadband access by the end of the year, those competitors have not yet achieved that critical size.

Additional Information Available Upon Request

Deutsche Bank Securities Inc. maintains a net primary market in the common stock of MCI WorldCom, Inc. and Covad Communications Group.

AT&T Corp., BellSouth Corporation, MCI WorldCom Inc. and Covad Communications stocks are optionable.

MCI WorldCom, Inc. has convertible issues outstanding.

An author of this report has a long position in the common shares of MCI WorldCom, Inc.

Deutsche Banc Alex. Brown Incorporated has been engaged as financial advisor to CAI Wireless Systems, Inc. in connection with its pending acquisition by MCI Worldcom, Inc.

Within the past three years, BT Alex. Brown Incorporated or a predecessor has managed or co-managed a public offering of Covad Communications Group, Inc.

Deutsche Bank Securities Inc. U.S. Equity Sales Offices, North America

Deutsche Bank Securities
950 East Paces Ferry Road
Suite 3320
Atlanta, GA 30326
(404) 812-6800

Deutsche Bank Securities
1 Federal Street, 21st Floor
Boston, MA 02110
(617) 988-8600

Deutsche Bank Securities
130 Liberty Street
New York, NY 10006
(212) 250-2500

Deutsche Bank Securities
31 West 52nd Street
New York, NY 10019
(212) 469-5000

Deutsche Bank Securities
101 California Street, 46th
Floor
San Francisco, CA 94111
(415) 544-2800

Deutsche Bank Securities
222 Bay Street, Suite 1100
P.O. Box 64
Toronto-Dominion Centre
Toronto, Ontario M5K
1E6
(416) 682-800

Deutsche Bank Securities
1501 McGill College
Avenue, Suite 1650
Montreal, Quebec H3A
3M8
(514) 286-5151

Deutsche Bank Securities Inc U.S. Equity Sales Offices, International

Deutsche Bank Securities
Taunusanlage 12
3rd Floor
Frankfurt, Germany 60325
(49) 69 9103 7597

Deutsche Bank Securities
7, Rue Du Rhone, 1st Floor
Geneva, Switzerland, 1204
011-41-22-319-4600

Deutsche Bank Securities
6 Bishopsgate
London EC2N 4DA
United Kingdom
(44171) 545-4900

Deutsche Bank Securities
3, Avenue de Friedland
75008 Paris, France
(331)5375-2446

Deutsche Bank Securities
Level 19, Grosvenor Place
225 George Street
Sydney, NSW 2000
Australia
(612) 9 258-1232

Deutsche Bank Securities
21-1 Toranomom 3-Chome
Minato-ku, Tokyo 105
(813) 5401-6990

Deutsche Bank Securities
Bahnhofquai 9- 11
CH-8023 Zurich,
Switzerland
(411) 224-7979


Deutsche Bank

Information herein is believed to be reliable and has been obtained from sources believed to be reliable, but its accuracy and completeness cannot be guaranteed. Opinions, estimates, and projections constitute our judgement and are subject to change without notice. This publication is provided to you for information purposes only and is not intended as an offer or solicitation for the sale of any financial instrument. Deutsche Bank Securities Inc. and its affiliates worldwide, may hold a position or act as market maker in the financial instruments of any issuer discussed herein or act as advisor or lender to such issuer. Transaction should be executed through a Deutsche Bank entity in the client's home jurisdiction unless otherwise permitted by law. Deutsche Bank Securities Inc. is a member of the NYSE and NASD. Copyright 1999. Deutsche Bank Securities Inc.

The CHAIRMAN. I am going to ask one question and then I would like you to answer it for the record because I have to leave, and then Senator DeWine will follow up. And I would like all three of you to take a crack at this, and please forgive me for having to leave after I ask it, but I am way behind on things I have got to get done.

There has been legislation introduced in Congress that would provide data relief to the local telephone companies. I am interested in your views on the impact that this type of legislation would have on the market for investment in Internet products and services, as well as the development of broadband networks.

So I would like to have each of you take a crack at that. We will start with you, Ms. Kovacs, and then I will turn the rest of the hearing over to Senator DeWine. If you would come up here, Senator DeWine, I would appreciate it. And if you would answer for the record, I would certainly want to read that later.

Ms. KOVACS. Thanks. I think that kind of legislation which would make it easier for the RBOC's to deploy their data networks would clearly encourage them to invest and would encourage Wall Street, in turn, to invest in them. There is a tradeoff, clearly, because that legislation which would favor the RBOC's would make life potentially somewhat more difficult for the data LEC's, the Covads and Rhythms and NorthPoints of the world.

So while you might get a lot more DSL deployed a lot more quickly through the RBOC's themselves, you might wind up getting somewhat less deployed through the data LEC's. As I was trying to say earlier in my initial statement, if the key regulatory goal becomes to try and get as much broadband out on both sides as fast as possible, to have DSL become a marketplace check on the cable industry's ability to engage in anticompetitive behavior, then you may very well want to lift the ban on the RBOC's and just go for sheer high-volume DSL through them. If your concern is more to just make sure that there are a lot of competitors out there and to protect the small competitors, then you would not want to have the regulation.

Wall Street, I don't think has a policy view. That is not our role. Our role is essentially to pick the winners and invest in them and make money for the small investors for whom we work. And if you do the free-the-BOC kind of bills, a lot more investment will go the BOC's, but the kind of market caps and the ability to raise money that the data LEC's have would collapse. If, conversely, you leave the rules as they are, then you are helping the small players, but getting access to capital at comparable kind of valuations becomes impossible for the RBOC's. So it is a complicated question.

Senator DEWINE [presiding]. Mr. Kimmelman.

Mr. KIMMELMAN. The biggest problem, I think, with this issue, Mr. Chairman, is it increasingly is impossible to separate data from voice from anything else. Everything is digital bits, and to the extent that we preserve the structure of the law that the local phone companies need to open their networks to competitors, separating out a different set of rules for data from voice, I think, is unenforceable and unworkable.

On the other hand, since we do recommend opening the Act, I would urge this committee and the Congress in general to look at

the opposite end of the market, where I think there is a bigger problem. Low-volume long distance, not just the high-volume data, is suffering from substantial rate increases. The FCC indicates prices are up, double what they were a year-and-a-half ago for low-volume customers. This is where we need an infusion of competition. Also, we believe there is a need for openness on the AT&T cable systems.

So there are a variety of policy issues that we think do need addressing. And in the context of that there is a way of looking at data without this artificial distinction between data and voice, that may be appropriate.

Senator DEWINE. Mr. Moore.

Mr. MOORE. Yes. Mr. Chairman, I would agree with Mr. Kimmelman. The artificial distinction between voice and data would definitely come into play. As you may know, voice has been tested over DSL services, thereby allowing RBOC's into interLATA data would, in effect, allow them into interLATA voice, given the way the technology is moving.

I also would state that I don't think it would significantly enhance the RBOC's activity unless it somehow motivated competitors to act. And I would say that it would definitely demotivate competitors because many of the competitors rely on the capital markets to fund their capabilities, and this would tremendously demotivate Wall Street to invest in these smaller competitors and increase their cost of capital significantly.

Senator DEWINE. Mr. Kimmelman, you heard Mr. Armstrong testify and he was fairly adamant that AT&T does not exercise control over very much of its cable holdings. In fact, basically what he said was that AT&T controls about 24 percent of the cable systems, and that AT&T's other holdings pose really no competitive threat.

You have attached to your testimony some interesting charts, two of them, in fact, which you have labeled Exhibit 2, for the record, and the one I am holding now is Exhibit 4. They show, I guess, AT&T's various business connections. I wonder if you would like to comment on what Mr. Armstrong had to say.

Mr. KIMMELMAN. I certainly would, Mr. Chairman. The issue is not some simple notion of control as if this is the widget business. This is the communications business and this is the infrastructure over which democratic discourse takes place in our society today. This is our future. This is how we know what we know, communicate what we need to learn from each other, and receive entertainment. It is critical to First Amendment rights. That is the first key point, so the notion of control is more complicated.

Second, we are taking an old monopoly telephone system and an old monopoly cable system and, through the 1996 Act, suggesting that there ought to be broad-based, wide open competition. In order to do that, it doesn't make a lot of sense if the few big players in the market own even 5 percent or 10 percent of each other. They lose the incentive to challenge each other as wide-open rivals in the marketplace.

So Mr. Armstrong starts from a very, very narrow image of AT&T and you have to own 100 percent. Well, I went back to look at what his company does own in other companies. He was talking about a 5-percent attribution rule. I don't think he needs to worry

about that too much. He needs to worry about where he owns 90 percent of Cable Vision Association, 75 percent of District Cable Vision Limited, 97.98 of InterMedia Partners, and I can go on and on, 85, 80, 75, 50, down to 33 percent of Cable Vision Systems.

Time Warner, he says to Senator Torricelli, he has no involvement in. Well, through his MediaOne acquisition, he gets almost 25 percent of Time Warner Entertainment, with board representation. He indicated no board representation before. These are substantial stakes in companies that could have aligned with someone else in the marketplace to challenge AT&T, to challenge TCI. Will they do that even with a small ownership stake?

The final point, Mr. Chairman. I mentioned before these are network systems coming out of a monopoly environment where we are asking for competition. In order for a programmer to make it, they need to get broad distribution. In order for an Internet service provider to make it, they need to reach a large portion of the public, and they are often looking for advertising dollar support. That means eyeballs.

If AT&T has any say in the vast majority of decisions of who gets on these systems, what services are provided, at what price, and whether they have any arrangements with anyone else who may want to compete with AT&T, that could undermine the development of broadband competition.

Senator DEWINE. Ms. Kovacs and Mr. Moore, in your testimony you both stated that the Internet is most likely to continue to grow if it is not regulated. And I certainly agree that as policymakers we need to avoid regulation of the Internet. I think it is particularly interesting, though, that you do not think the Government should take a role in forcing AT&T to open up its cable system. You have stated that the market will eventually force AT&T to open its system, but I would like to explore that just a little bit more with you today.

If AT&T can offer a good product, such as RoadRunner or @Home which does allow easy access to the Internet, and if they can combine that good rates on other bundled services, do you think a significant number of consumers will still demand other options?

Ms. KOVACS. To me, the key is whether DSL really becomes broadly deployed over the next year or two. And there are some technology issues and some regulatory issues there, but it looks right now like we might very well see 1 million or more DSL subscribers out there next year being offered more or less the same sort of band width that the cable companies offer, possibly better security on the network and a choice of any ISP and any content you want to get.

If that scenario develops, then I think the pressure will be on AT&T and the other cable companies to provide the same kind of openness. If a year from now we are sitting here and there are still only 100,000 DSL subscribers, then I think you have got a problem. So I am not looking at this as sort of a forever answer. I think given the way the market looks like it will develop at this point, it is reasonable to assume that the telcos with DSL will provide a check on the cable industry and force it to open. If that turns out to be a wrong prediction, then you probably will need to reexamine

the issue and very well might need to do something to open up the cable industry.

Senator DEWINE. Mr. Moore.

Mr. MOORE. As we have stated, we believe that AT&T will open up its cable plant. And if the RBOC's also sufficiently open up the local loop for DSL resale, we believe that a number of other third parties will introduce a variety of different services that will also be appealing to consumers. And at the end of the day, neither the RBOC's nor AT&T will have 100 percent market share and that consumers will demand new service offerings as they are presented to them.

Senator DEWINE. Let me ask the whole panel this question. The first panel this morning was asked about AT&T's plans to contractually prohibit consumers from downloading or streaming video for longer than 10 minutes. I am concerned that this prohibition on video streaming will serve only to protect the cable companies' monopoly in providing video services. I would be interested in your views on that, and also will this in any way affect investment.

Mr. Moore, do you want to start?

Mr. MOORE. Yes, Mr. Chairman. I would agree with you that this constraint is somewhat onerous and will become somewhat onerous over time. I would also point out that perhaps from the RBOC's standpoint, they may limit voice over DSL. So I think both players in this broadband game will have to be watched for abuses relative to their core service offerings, and I think that both the regulators as well as the market will have to continue to place pressure on them to avoid doing that.

Senator DEWINE. Mr. Kimmelman.

Mr. KIMMELMAN. I think it is a very legitimate concern, Mr. Chairman. Mr. Moore says watch them carefully and prevent discrimination. Ms. Kovacs says if competition doesn't develop, you will need to step in. I suggest you have a policy paradigm here, which is quite clearly putting the players in the market on warning that you expect pro-competitive behavior and that you intend to step in with open access requirements and prevention of discrimination through these kinds of streaming restrictions if they are used to prevent the development of competition. I think that is the appropriate way to go. I think your concern is absolutely right.

With cable rates rising and soaring, we have heard promises before that satellite was coming and others were coming, and it didn't happen in the time or as yet in the way we had hoped. We can't rely on those promises. I think we need a framework to ensure that things that are discriminatory are prevented right up front so we get more competition.

Senator DEWINE. Ms. Kovacs.

Ms. KOVACS. I think again the issue comes down to whether cable has the entire field to itself or whether it faces competition. And for video, it faces competition not only potentially from DSL, but also from satellite. And down-loading very high-capacity from satellite is something that can be done very efficiently, although the upstreaming is not as efficient. So I think again the pressure will be on the industry to open itself up.

And I think that Mr. Armstrong's point that in a world of 1,000 channels your behavior is very different from your behavior in a

world where you only have 30 channels—I think that is a valid point. And I think that the value of content is what is going to become very, very high, and that in a world of essentially infinite access, the distributors are going to be looking for content, not shutting it out. And I think that ultimately as the pipes become fatter and capacity constraints disappear, it will lead to the streaming video problem going away.

Senator DEWINE. Mr. Kimmelman, do you want to comment on what standards you think the FCC should adopt with regard to ownership attribution?

Mr. KIMMELMAN. Mr. Chairman, I think the FCC, following its direction from Congress in 1992, ought to quickly enforce its horizontal rules. They are not as tough as we had asked them to impose. Controlling 30 percent of the market is massive size compared to other players in the market. However, it is at least a good starting point.

Their attribution rules, I think, are appropriate. And I think if AT&T needs to make a case that to be larger than that is essential to try to compete against the telephone monopoly, we have an enormous problem in this country that looks like it can at best sustain a duopoly. We need to know that right now, so I say the rules ought to be as the FCC had proposed. The stay on them should be lifted. I think there is absolutely no question that with recent Supreme Court rulings, those rules are constitutional and valid. And then we ought to understand whether we have a bigger problem with the 1996 Act than we even guessed.

Senator DEWINE. Ms. Kovacs or Mr. Moore, do either one of you want to comment on that?

Ms. KOVACS. I am not a lawyer. I am not going to address that one.

Mr. MOORE. I would like to comment, Mr. Chairman. In terms of the way Wall Street is looking, or at least I personally am looking at the AT&T situation, we see AT&T, as Mr. Armstrong mentioned this morning, having about 18 percent market share of all the telecom spending in the U.S. over every square foot, whereas the RBOC's pretty much have the remainder. So our excitement about AT&T is their ability to capture more market share and not to make it a less competitive situation.

When you look at the amount of network deployed, AT&T probably has a tenth of the overall network deployed in this country. Just from a raw dollar standpoint, we do not see a critical issue in terms of AT&T's control of facilities in this country.

Senator DEWINE. Mr. Kimmelman.

Mr. KIMMELMAN. Could I just comment?

Senator DEWINE. Sure.

Mr. KIMMELMAN. That is an interesting perspective, not at all consistent with antitrust law, but Wall Street has a different view. I would just go back to something that is very indicative of what Wall Street thinks, and that is that the price per subscriber of cable systems with the recent AT&T transactions more than doubled.

Now, the world didn't change overnight. The infrastructure is the same. The Internet is what everyone knows it to be. This wasn't a new technology that they invented with these transactions. They

paid more than twice as much for these cable monopolies and Wall Street endorsed it for one simple reason, I believe, and that is that they are in the position to get that revenue back from the customer and there is no one else in reach to challenge them. That may be great for Wall Street, but that is extremely troublesome for the consumer's pocketbook.

Senator DEWINE. Ms. Kovacs.

Ms. KOVACS. I guess I can move on with that point for a second. I think one of the reasons for that is that AT&T has the brand and the scale to actually be able to make cable telephony a reality, which I don't think any other player can do. You need a fairly high level of penetration to make it economic, and AT&T is probably the only player that has any hope of really doing that. So to the extent that the Act originally envisioned a facilities-based competitor in telephony, I think that acquisition is a positive.

I guess to go back to another sort of financially-related issue that came up earlier, the distinction that was made between the telco networks and the cable networks, with the telcos described as monopolies paid for on rate of return by ratepayers and the cable networks having been paid for essentially by shareholders—that distinction is one I am very uncomfortable with and I guess I would like to make that point in the record.

At least as I look at it, both of them have been sort of the only in players in franchises where some franchising authority gave them that ability. When I look at their financials, both of them run fairly similar cash flow-to-revenue ratios, and the only reason cable has been unprofitable is that it chooses to handle the way it manages itself very differently. It doesn't operate under the kind of depreciation rules that the regulators imposed on the telcos, or whatever. But at least just sort of as a matter of what I see as fact, I think it is important to understand that the two networks were financed very, very similarly, and essentially both with more or less equal risk to shareholders.

Senator DEWINE. Well, I want to thank this panel as well as our previous panel for your testimony. It has been very, very helpful. Clearly, we are dealing with a critical set of issues. Cable and telephone are already important industries, vitally important, and broadband is fast becoming a critical part of our economy as well.

We need really, as we continue to look at this, the input of experts like yourselves, and this committee and the subcommittee will continue to consult with you as we look at these issues. So, again, I think this morning's hearing has been very helpful. We appreciate your time and your patience.

Thank you very much.

[Whereupon, at 12:56 p.m., the committee was adjourned.]