



September 6, 2013

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Via Hand Delivery

Debra Howland
Executive Director and Secretary
State of New Hampshire
Public Utilities Commission
21 South Fruit Street
Concord, NH 03301

Re: Objection of Northern New England Telephone Operations LLC (“NNETO”) and Enhanced Communications of Northern New England Inc. (“Enhanced Communications”) to Public Utility Assessment and Related Invoices

Dear Ms. Howland:

NNETO and Enhanced Communications (collectively, “FairPoint Communications”) respectfully object to the Public Utility Assessment invoices these companies received on August 21, 2012 (each being an “Assessment” and collectively the “Assessments”) for fiscal year 2013. This objection is made pursuant to RSA 363-A:4, which provides that each public utility with an objection to the amount it has been assessed for the prior fiscal year must file its written objection within thirty (30) days of the assessment for the first quarterly payment (of the current fiscal year). The fiscal year 2014 Assessments, each dated August 8, 2013, were received by FairPoint Communications on August 14, 2013.

Attached as Exhibit A, is FairPoint Communications’ Objection filed on September 17, 2012, and later docketed in DM 12-276. I include this as part of the instant submission as it contains the very positions which are still relevant today, and are the basis of FairPoint Communications’ current Objection. To be specific, there are two principles driving the Objection, one involving mission and the other jurisdiction. First, neither NNETO nor Enhanced Communications should be required to fund expenses of the Office of Consumer Advocate in light of the enactment of and effectiveness of Senate Bill 48. Second, the Commission has no statutory authority to levy an assessment on either NNETO or Enhanced Communications’ interstate revenues, nor does federal law delegate any role to the Commission to regulate, oversee or advise regarding FairPoint Communications’ interstate telecommunications services. Furthermore, any expenses of the Commission related to requirements of federal telecommunications law are *de minimis* compared to the Commission’s proportional assessment on FairPoint Communications’ interstate revenues. Because the assessments are made on revenues that are not subject to Commission

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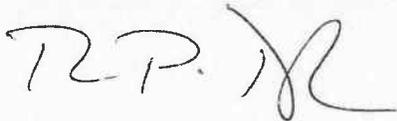
regulation, and for purposes that are no longer permitted by law, they are excessive, erroneous, unlawful and invalid, and as such are an unconstitutional taking of property as well.

In light of these positions, and as detailed in the Excel spreadsheet contained in Exhibit A, NNETO's fiscal year 2013 assessment should be reduced from \$942,999 to an amount not exceeding \$403,229. Enhanced Communications' fiscal year 2013 assessment should be reset from \$70,452 to an amount no more than \$5,500.

Notwithstanding this Objection, we recognize and appreciate the efforts of the New Hampshire Public Utilities Commission's Electric and Telecommunications Staffs (jointly the "Staff") as well as other participating stakeholders for their work in Docket No. IR 13-038. Staff has hosted several collaborative technical sessions which have led to productive discussion, insights and straw proposals for the reform of the assessment process. FairPoint intends to continue its participation in IR 13-038 with the hope that it leads to an assessment process which aptly reflects the deregulated landscape in New Hampshire for telecommunications companies.

Thank you for your consideration in these matters, and as offered in last year's Objection, FairPoint Communications remains willing to meet with you in advance of any hearing to review and potentially resolve the issues raised herein.

Very truly yours,

A handwritten signature in black ink, appearing to read "R.P. Taylor", with a stylized flourish at the end.

Ryan P. Taylor

Cc: Office of Consumer Advocate

DEVINE
MILLIMET

ATTORNEYS AT LAW

September 17, 2012

HARRY N. MALONE, ESQUIRE
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VIA HAND DELIVERY

Debra A. Howland
Executive Director & Secretary
New Hampshire Public Utilities Commission
21 S. Fruit Street, Suite 10
Concord, NH 03301

Re: Objection to Public Utility Assessment and Related Invoices

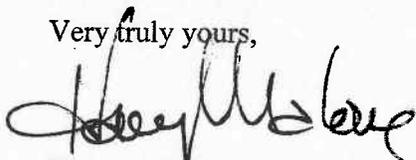
Dear Ms. Howland:

On behalf of Northern New England Telephone Operations LLC and Enhanced Communications of Northern New England Inc. enclosed for filing is an original and six (6) copies of an Objection to Public Utility Assessment and Related Invoices.

A compact disk containing this document is also enclosed.

Please date-stamp the enclosed extra copy of this filing for return to us.

Very truly yours,



Harry N. Malone

HNM/aec

Enclosures

cc: Electronic Service List



September 17, 2012

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Via Hand Delivery

Debra Howland
 Executive Director and Secretary
 State of New Hampshire
 Public Utilities Commission
 21 South Fruit Street
 Concord, NH 03301

Re: Objection of Northern New England Telephone Operations LLC ("NNETO") and Enhanced Communications of Northern New England Inc. ("Enhanced Communications") to Public Utility Assessment and Related Invoices

Dear Ms. Howland:

I received Public Utility Assessment Invoices for each of NNETO and Enhanced Communications, each invoice being dated August 17, 2012, and each invoice being received on August 21, 2012 (each being an "assessment" and collectively the "assessments"). This will serve as an objection to the assessments contained therein pursuant to RSA 363-A:4.¹ While this statute requires the New Hampshire Public Utilities Commission (the "Commission") to hold a hearing on this objection after reasonable notice, please note that I am willing to meet with you in advance of any hearing to review and potentially resolve the issues raised herein.

By way of brief background, NNETO's assessment totals \$942,999. Per the attached spreadsheet and as explained below, NNETO's assessment should be reset to an amount which does not exceed \$403,229. Enhanced Communications' assessment totals \$70,452. As explained below, Enhanced Communications' assessment should be reset to an amount not to exceed \$5,500. Overall, these revised assessments are predicated upon two general principles: (i) neither NNETO nor Enhanced Communications should be required to fund expenses of the Office of Consumer Advocate in light of the enactment of and effectiveness of Senate Bill 48 and (ii) the Commission has no statutory authority to levy an assessment on either NNETO or Enhanced Communications' interstate revenues. Such assessments constitute an unlawful and unconstitutional taking of property.

¹ Note that NNETO and Enhanced Communications will make in a timely manner the first installment of their respective assessment.

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- I. For purposes of the assessments, the Commission must remove from the funding formula any and all expenses associated with the Office of Consumer Advocate as neither the Residential Ratepayers Advisory Board nor the Consumer Advocate have jurisdiction over or regarding Excepted Local Exchange Carriers ("ELECs") or services provided to any end user.**

The Commission's Fiscal Year 2013 List of Utility Assessments ("2013 Utility Assessment"), page 1, specifies that the Commission calculated utility assessments by "...allocating the FY 2013 (July 1, 2012 through June 30, 2013) budget estimate of the [Commission] and [OCA] to each utility in direct proportion as the revenues relate to the total utility revenues as a whole." There is no lawful reason to include the annual expenses of the OCA in the calculation of the assessment for ELECs. Senate Bill 48 amended the OCA's enabling legislation, RSA 363:28, such that the OCA has no jurisdiction to petition, initiate, appear or intervene in matters pertaining to (among other things) rates, terms or conditions related to services provided by ELECs to end user customers. Similarly, the enabling legislation for the Residential Ratepayers Advisory Board, RSA 363:28-a, has been amended such that it has no statutory authority to advise the Consumer Advocate on matters pertaining to ELECs or their end use customers.

In light of the above, there is no legal basis to require ELECs to pay the costs and expenses of the OCA. Such expenses must be removed from the assessment calculation for ELECs. RSA 363-A:1 requires the Commission to "...ascertain the total of its expenses during such year incurred in the performance of its duties relating to public utilities as defined in RSA 362:2 and relating to the [OCA]..." The Commission's duties related to public utilities have been amended by Senate Bill 48 and ELECs have been exempted from many statutory obligations previously imposed on local exchange carriers. For example, and without limitation, incumbent telecommunication carriers that elect to become ELECs (with NNETO being an ELEC as a matter of law pursuant to RSA 362:7(I)(c)) can no longer be treated differently from a regulatory perspective than competitive local exchange carriers (*see* RSA 362:8) and the Commission can no longer investigate or regulate rates, fares, or charges for services provided by ELECs. As the Commission's duties have significantly decreased in this regard and as the OCA's enabling legislation specifically exempts ELEC matters from the OCA's jurisdiction, it necessarily follows that none of the OCA's expenses are attributable to NNETO and therefore cannot be assessed on NNETO. Furthermore, the New Hampshire Supreme Court, describing Commission assessments as "license fees," has held that "[t]o be valid charges made as license fees must bear a relation to and approximate the expense of issuing the licenses and of *inspecting and regulating* the business licensed ... such fees ... must be *incidental to regulation* and not primarily for the purpose of producing revenue." *Laconia v. Gordon*, 107 N.H. 209, 211 (1966) (emphasis added and citation omitted) (*accord Appeal of Ass'n of N.H. Utils.*, 122 N.H. 770, 773 (1982)). Accordingly, the OCA expenses must be removed from the assessment calculation as applied to NNETO and any other ELEC and NNETO's assessment should be reduced accordingly.

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II. For purposes of the assessments, the Commission cannot legally levy an assessment utilizing NNETO's interstate revenue or Enhanced Communications' interstate revenue.

As noted by the Supreme Court's decision in *Laconia*, the Commission's assessment must bear relation to the licensed business. As the Commission does not regulate interstate services, requiring NNETO and Enhanced Communications to pay an assessment on interstate revenue is unlawful. As demonstrated by the attached ARMIS Annual Summary Report and the 2013 Utility Assessment, the Commission assessed NNETO against its total reported revenue of \$296,612,000. This figure includes revenue generated through the provision of interstate services, nearly all of which are regulated by the Federal Communication Commission and not this Commission. NNETO's interstate revenue and non-regulated revenue must be removed from the assessment calculation as the Commission does not regulate the services which generate the revenue. In addition, the imputed revenue related to directory listings in New Hampshire, which is not real in any event, must be removed from the assessment calculation as the Commission has no authority to impute such revenue against NNETO in light of the enactment of and effectiveness of Senate Bill 48.

NNETO believes that its assessment must be reduced to a figure not to exceed \$403,229. The attached ARMIS Annual Summary Report includes a revised assessment calculation and that report is incorporated herein by reference. However, even that figure must be reduced to account for the removal of the OCA's estimated expenses as discussed above.

Similarly, approximately 88% of the revenues reported by Enhanced Communications relate to and derive from interstate services. The Commission's jurisdiction over Enhanced Communications arises from its registration as a competitive intraLATA toll provider ("CTP"), with Enhanced Communications' CTP Certification number being 04-001-08. Administrative Rule Puc 402.10 defines CTP as "...any carrier authorized to provide intraLATA toll service, except for an ILEC that provides toll service exclusively to its local service customers in New Hampshire." However, Enhanced Communications' interexchange (i.e., long distance) revenues and all other interstate revenues must be excluded from the assessment calculation. Therefore, the assessment must be revised downward to an amount not to exceed approximately \$5,500. However, as with NNETO's assessment, even that figure must be reduced to account for the removal of the OCA's estimated expenses as discussed above.

NNETO and Enhanced Communications recognize that RSA 363-A:2 requires the Commission and OCA's expenses to "...be assessed against the public utilities...[and]...shall be calculated by using the gross utility revenue of all public utilities..." However, the Commission's assessment formula is not consistent with a plain reading of the applicable statutory scheme when taken in its entirety. The reference to "gross utility revenue" in RSA 363-A:2 must be read in conjunction with the definition of a public utility as defined within RSA 362:2. While the

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entirety of RSA 362:2 covers matters such as the distribution of gas, heat, electricity and water, for purposes of a telecommunications company, RSA 362:2 defines a "public utility" as:

...every corporation, company, association...owning operating or managing any plant or equipment or any part of same for the conveyance of telephone or telegraph messages...and any other business...over which on September 1, 1951, the public utility exercised jurisdiction. (Emphasis added.)

The Commission's own rules addressing the issue narrowly tailor the definition of a "utility" to "...any 'public utility' owning, operating, or managing any plant or equipment, or any part of the same for the conveyance of telephone messages for the public, pursuant to RSA 362:2." See Puc 402.60 (emphasis added). Thus the phrase "gross utility revenue" must be calculated by counting the revenue based upon the statutory definition of a public utility. As applicable to NNETO and Enhanced Communications, utility revenues must be limited to revenue from providing (i) "telephone or telegraph messages" within New Hampshire and (ii) "any other business...over which on September 1, 1951, the public utility exercised jurisdiction."²

In addition, it is clear that the Communications Act of 1934, as amended, vests the Federal Communications Commission ("FCC") with jurisdiction over "all interstate and foreign communications by wire or radio." 47 U.S.C. 152(a) (1988) (emphasis added). As the D.C. Circuit Court of Appeals observed in *NARUC II*, regulatory authority over interstate communications is "totally entrusted to the FCC." *NARUC II*, 746 F.2d 1492, 1501 (D.C. Cir. 1984). Moreover, the FCC's plenary authority plainly precludes a state from enforcing a regulation that, on its face, purports to regulate interstate communications. See *In re Operator Servs. Providers of America, Memorandum Opinion and Order*, 6 FCC Rcd. 4475 (1991) (preempting a Tennessee statute expressly regulating interstate communications services offered by operated service providers on the grounds that the statute infringed on the FCC's plenary jurisdiction over interstate communications services); see also *AT&T v. Public Serv. Comm'n of Wyoming*, 625 F. Supp. 1204, 1208 (D. Wyo. 1985) ("It is beyond dispute that interstate communication is normally outside the reach of state commissions and within the exclusive jurisdiction of the FCC."). Therefore, as a matter of Federal law, the Commission cannot exercise jurisdiction over interstate services and applicable New Hampshire statutes cannot be interpreted as allowing any form of regulation over such services.

Consequently, a plain reading of these statutes requires the Commission's assessment to be based upon the revenues of services over which the Commission and OCA exercise their respective

² Attached to this submission is an AT&T Profile and Historic Information paper reflecting how telephone service evolved. Of note, in 1951 AT&T Bell Labs developed technology needed to support direct distance dialing.

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jurisdiction. Based upon the above, NNETO and Enhanced Communications respectfully request their assessments to be revised.

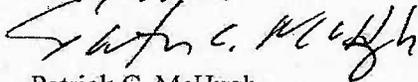
III. Requiring NNETO and Enhanced Communications to pay an assessment for the expenses of the Office of Consumer Advocate and to pay an assessment based upon interstate revenues constitutes an unconstitutional taking of NNETO and Enhanced Communications' property.

The right to property is "natural, essential, and inherent," N.H. CONST. pt. I, art. 2, and is constitutionally protected against encroachment by Par I, Article 12 of the State Constitution. Accordingly, the State may effectuate a taking through the police power only if just compensation is paid and the property is put to a public use. See *Merrill v. City of Manchester*, 127 N.H. 234, 237 (1985); *Soucy v. State*, 127 N.H. 451, 454 (1985); 14 P. Loughlin, *New Hampshire Practice, Local Government Law* § 825 (1995). In addition, "...[i]t is well settled that a State cannot take private property without affording the owner the constitutional protection of due process." *Petition of New Hampshire Bar Ass'n*, 122 N.H. 971, 975 (1982). By depriving NNETO and Enhanced Communications of their right to retain their non-New Hampshire regulated revenues and by requiring NNETO and Enhanced Communications to pay for the expenses of an agency on a disproportionate basis, the assessments constitute an inverse condemnation. See *Appeal of Public Service Co. of N.H.*, 122 N.H. 1062, 1071 (1982).

NNETO and Enhanced Communications are entitled to relief for an abridgement of vested rights. See *Appeal of Public Service Co.*, 122 N.H. at 1071. "Generally the term vested right expresses the concept of a present fixed interest, which in right and reason should be protected against arbitrary state action. A vested right cannot be contingent nor a mere expectance of a future benefit." *Gilman v. County of Cheshire*, 126 N.H. 445, 448-49 (1985). The proper remedy in this case is to (i) recalculate the assessments as reflected herein and (ii) abate both NNETO's assessment and Enhanced Communications' assessment via a reduction in the assessments owed for the Commission's fiscal quarters 2 through 4 of fiscal year 2013.

Thank you for your consideration of these matters.

Very truly yours,



Patrick C. McHugh

Cc: Office of Consumer Advocate

FCC Paper Report 43-01
 ARMIS Annual Summary Report

COMPANY: Northern New England Telephone
 Telephone Operations LLC
 STUDY AREA: New Hampshire
 PERIOD: From: Jan 2011 To: Dec 2011
 COSA: FPNH

A ACCOUNT LEVEL REPORTING
 (Dollars in thousands)

| ROW | CLASSIFICATION (a) | Total (b) | Nonreg (c) | Adjustments (d) | Subject To Separations (f) | State (g) | Interstate (h) |
|-----------------|---------------------------------|--------------|---------------|--------------------|----------------------------------|--------------|-------------------|
| Revenues | | | | | | | |
| 1010 | Basic Local Services | 82,958 | N/A | 0 | 82,958 | 82,958 | 0 |
| 1020 | Network Access Services | 139,250 | N/A | 0 | 139,250 | 9,443 | 129,807 |
| 1030 | Toll Network Services | 13,911 | N/A | 0 | 13,911 | 13,881 | 31 |
| 1040 | Miscellaneous | 33,250 | N/A | 0 | 33,250 | 22,165 | 11,084 |
| 1045 | Nonregulated | 7,540 | 7,540 | N/A | N/A | N/A | N/A |
| 1060 | Uncollectibles | 3,597 | 101 | 0 | 3,497 | 1,615 | 1,882 |
| 1090 | Total Operating Revenues | 273,312 | 7,439 | 0 | 265,872 | 126,832 | 139,040 |
| | Imputation of Directory Revenue | 23,300 | | | | | |
| | Total Assessed Revenue | 296,612 | | | | | |
| | Assessment | 942,899 | | | | 403,229 | |
| | Assessment Factor | \$ 0.00318 | | | | \$ 0.00318 | |

The revenue data above is available on the FCC ARMIS website at http://fieldoss.fcc.gov/eafs7/adhoc/table_year.ta

[Personal](#) [Business](#) [About AT&T](#)



Backgrounder

In today's rapidly changing business environment, many of the most exciting innovations are being spearheaded by AT&T Labs, the long-respected research and development arm of AT&T.

History

The year was 1901...the beginning of a new century. Twenty-five years earlier, Alexander Graham Bell made his historic first call to his assistant, Watson, capping the exciting invention of the telephone. While Bell Telephone prospered in the years following the phone's invention, the company was not alone in the market. By the turn of the century, well over 10,000 rival telephone companies had sprung up to compete for a share of the rapidly growing voice communications marketplace.

The founders of the Bell System quickly rose to meet this competitive threat and to unify communications within the United States. They recognized the need to work toward a concept of universal service that would ultimately allow a caller to pick up a telephone and reach another person anywhere in the world, efficiently and cost-effectively. They began to work toward this concept by making strategic acquisitions and supporting global standards. The founders also realized that to overcome the technological obstacles that were certain to arise in this new industry, they needed a commitment to a long-term research and development effort that would be second to none in the industry. To achieve this, the Bell System established Bell Labs in 1925.

Throughout the next seven decades, Bell Labs was responsible for some of the world's major inventions across a broad spectrum of technologies, including the transistor, the field of Information Theory, the solar cell, and the communications satellite.

In 1996, as part of the "tri-vestiture" that saw AT&T divest its equipment and computer businesses, AT&T inherited the divisions of Bell Labs that focused on the areas of computing, information, and communication science, and the name changed to AT&T Labs. While the name may have changed, AT&T Labs' commitment remains, to create the innovations that drive the AT&T global network to the cutting edge and technologies to transform AT&T and the industry.

Many technologies that AT&T Labs pioneered fueled the "IT Revolution" of the late 1990's. With the new millennium came a renewed interest and appreciation for AT&T's sound business practices and AT&T Labs' legacy of world-class research and innovation. Through the economic uncertainty at the outset of the 21st century, AT&T Labs has been a consistent provider of products and services in areas ranging from IP network management and optical technology to automatic speech recognition and next-generation text-to-speech products.

The research and development capabilities of AT&T Labs continue to give AT&T a significant competitive advantage. Other companies can also take advantage of the expertise at AT&T Labs by licensing technologies and patents from the Labs' impressive portfolio.

An Unsurpassed Record of Achievement

AT&T Labs carries on a tradition of technology breakthroughs and product and service innovations that spans 120 years. No dedicated research organization can point to a longer history or wider range of inventions and discoveries. Beginning with the invention of the telephone in 1876, even a partial list of accomplishments by the company's scientists, engineers, and product development specialists is remarkable:

- 1876—Alexander Graham Bell called for his assistant, using the celebrated phrase, "Mr. Watson! Come here! I want you!" This marked not only the first phone call but also the beginning of a revolution in communications and commerce.

- 1918—H. Nyquist began investigating ways to send pictures over telephone circuits, leading to the first primitive facsimile transmission in 1924.
- 1920s—AT&T engineers invented the technology that brought sound to Hollywood motion pictures. In addition, several AT&T Bell Labs groups discovered techniques that were later adapted for broadcast sound recording and phonographic records.
- 1926—Bell System engineers pioneered technological breakthroughs that resulted in the first two-way conversation across the Atlantic.
- 1927—AT&T was the first company in the United States to demonstrate the technology that made television possible.
- 1929—AT&T Bell Labs invented the first artificial larynx. Thirty years later, the Labs introduced an electronic artificial larynx based on a design that's still in use today.
- 1933—As part of a series of experiments to reduce phonograph distortion, A.C. Keller and I.S. Rafuse tried two-channel recording. This ultimately led to the first U.S. single-groove stereo recording seven years later.
- 1933—K. Jansky pointed his radio antenna toward the Milky Way's center and was startled to hear noise apparently coming from the stars. This discovery led to a new tool for astronomical research called the radio telescope.
- 1939—AT&T Bell Labs developed the first production high-frequency radar, which permitted sharper beams using smaller antennae. This technology also would lead to the creation of the microwave oven several decades later.
- 1939—H.W. Dudley invented an artificial talking machine called the "Voder," the world's first electronic speech synthesizer.
- 1939—The first electrical and digital computer, consisting of 450 telephone relays and 10 crossbar switches, was able to divide two eight-digit numbers and find the answer in about 30 seconds.
- 1947—J. Bardeen, W.H. Brattain, and W. Schockley created the first transistor. Their work would earn a Nobel Prize.
- 1948—Claude Shannon developed a new theory of communications, signaling the dawn of the "information age."
- 1950s—R.S. Ohl discovered that sunlight shining on a silicon wafer produces a surprisingly strong electrical current. This led to the invention of the first solar cells.
- 1951—AT&T Bell Labs was instrumental in developing the technology needed to support direct distance dialing.
- Late 1950s and beyond - AT&T Labs developed the laser into a useful device for transmitting information.
- 1960—AT&T Bell Labs launched Echo, an experimental balloon off which messages could be bounced. This led the way for the development of Telstar, the world's first active communications satellite.
- 1965—While conducting radio astronomy experiments A.A. Penzias and R.W. Wilson were frustrated by noise in their receiving system. The pair determined that this noise came from "background radiation." Their hypothesis supported the Big Bang theory on the creation of the universe.
- 1969—The Internet was launched as an application on the UNIX operating system, which was developed at AT&T Bell Labs.
- 1977—AT&T Bell Labs recognized the potential for transmitting information as lightwaves carried through glass fibers. This research led to the installation of the first lightwave system to provide a full range of telecommunications services—voice, data, and video—over a public switched network.
- 1983—AT&T Bell Labs researchers divided wireless communications into a series of cells that automatically switched callers as they moved from cell to cell. This development led to the introduction of cellular phones and made today's mobile communications possible.
- 1983—AT&T researcher Bjarne Stroustrup built the first version of C++. The C++ language is so flexible that it's used in PCs and supercomputers, as well as in software that runs everything from cameras to elevators.
- 1989—AT&T Bell Labs introduced a speech-driven robot, named SAM for Speech-Actuated Manipulator. With one arm, two video cameras, and the ability to understand 300 billion sentences, SAM could perform highly technical jobs that were too hazardous for humans.
- 1992—AT&T Bell Labs combined research work in speech recognition and speech synthesis, putting all the components in place to create a real-time language translator.
- 1992—AT&T Bell Labs introduced fault tolerance software that allows a telecommunications system to "tolerate" hardware faults, and some of the design and coding faults that threaten to shutdown a system.
- 1993—The Model 70 computer videophone not only made simultaneous video communication possible, it offered callers the ability to open, view, and edit files, as well as annotate and write comments on the screen.

- 1998—AT&T Labs developed the Phone Web Interactive Voice Response (IVR) system, which automates routine phone transactions. Smaller companies could now afford an IVR system because Phone Web does not require premises equipment and costly programming. Phone Web allowed a customer to access the content and interactions of Web pages through a telephone.
- 1999—AT&T Labs researchers lead the way in the new field of Quantum Computing, which seeks to apply the principles of Quantum Physics to computing. Quantum Computing will dramatically speed up processing time by allowing a computer to simultaneously compare a range of possibilities rather than weighing one possibility at a time, as computers currently operate.
- 2000—AT&T Labs researchers developed a suite of state-of-the-art fraud protection tools that rely on the AT&T Network Connection (ANC) system for transport of long-distance services. The ANC fraud protection package makes it possible to detect fraud in a matter of hours instead of days.
- 2001—The publication of "Web Principles and Protocols: HTTP/1.1, Networking Protocols, Caching, and Traffic Measurement" codifying standard techniques for measuring network traffics. The authors helped found the annual ACM Internet Measurement Conference. AT&T Labs researchers also developed Natural Voices Text-to-Speech: In 1936 H.W. Dudley, a Bell Labs scientist, invented the first electronic speech synthesizer. Since that time AT&T Labs has been at the forefront in developing this technology. In 2001, AT&T unveiled the most advanced synthetic speech system to date, AT&T Natural Voices. At the heart of this technology is the AT&T Natural Voices Text-to-Speech (TTS) Engine, and this engine supports a library of multilingual male and female voice fonts in languages including U.S. English, Latin American Spanish, German, U.K. English, Parisian French and Canadian French (and this list will continue to grow). AT&T Natural Voices' TTS technology is the key to giving voice- a pleasant, natural and crystal clear voice-to a new generation of AT&T managed business services. Integrated with other AT&T Labs speech technologies-including speech recognition, natural language understanding, and dialog management-Natural Voices is "Closest to the customer's ear," providing human-like speech output capabilities that will help accelerate the use of speech technologies in automated customer interaction systems.
- 2002—Distributed Feature Composition (DFC) was integrated with Web capabilities to create the V+Plus platform. DFC is a modular architecture for the description, analysis, and rapid implementation of telecommunication services. AT&T Labs also introduced the world's first cross-country distributed, large-scale optical mesh restoration technology.
- 2003—Advanced features for AT&T Consumer VoIP Trial built and deployed on the V+Plus Advanced Managed Voice Services platform. AT&T offered MVS2PC: Automated software migration from mainframe to Linux. AT&T Labs also offered Tomo-gravity: Invention of scalable methods for inference of large scale IP network-wide traffic matrices from link loads and SCAMP shown to be the world's largest publicly known database by far as verified by being awarded two Grand Prizes in the 2003 Winter Top 10 Very Large Database contest. Data management for SCAMP is provided by Daytona.
- 2004—Introduction of Ultra Long Haul WDM Transmission into AT&T's cross-country Fiber Network. AT&T Labs also offered Advanced features for AT&T CallVantage® Service deployed on the V+Plus Advanced Managed Voice Services platform and launched AT&T Internet Protect(sm) managed security services using proprietary technology from AT&T Labs including AT&T's Daytona(tm) data management system.
- 2005—Creation of AT&T Traffic Analysis Service (TAS) tools addressing 24x7 network-wide IP traffic analysis and leveraging Daytona(tm) scalable data warehouse technology. AT&T also had successful field trials of pre-standard WiMax equipment supporting broadband fixed wireless access to AT&T customers. AT&T Labs created innovative IP multicast network management tools to support industry-leading proactive and reactive management for AT&T's emerging IP multicast services.

Technical Expertise and a High Business IQ

AT&T has averaged over two global patents issued per business day since the inception of AT&T Labs. The goal is to continue to create value for AT&T's customers and the company through unmatched innovation.

AT&T Labs is recognized as the world's leading corporate R&D organization that focuses on developing next-generation solutions for the Internet and the world's networks. AT&T Labs development concentrates on technologies that align with AT&T's business objectives. We apply our research in practical and profitable ways. In research endeavors in fundamental sciences such as mathematics and cryptography, we focus on outcomes that are germane to the long-term interests of AT&T.

Unsurpassed expertise and real-world experience are key assets that enable AT&T Labs to create meaningful competitive advantages for AT&T customers and shareholders. Nearly 80% of the scientists and researchers that comprise the AT&T Labs Research unit have a Ph.D. or another advanced degree. Several are members of the National Academy of Science or National Academy of Engineering, and many more individuals are elected Fellows of prestigious industry organizations such as the IEEE and the ACM. In addition, members of AT&T

Labs Research have won major industry awards and prizes for their work. In the past two decades, over 50 AT&T Labs professionals have been named AT&T Fellows for demonstrated technical and scientific excellence.

Recent Outstanding Success Stories

AT&T Labs research has resulted in a steady course of major achievements over the past several years. A sampling of AT&T Labs' recent accomplishments includes:

- Developing a sophisticated text-to-speech (TTS) engine and synthesized voices referred to as *AT&T Natural Voices™*. The TTS technology, now a component of services for AT&T Business customers, is capable of creating remarkably natural-sounding synthetic speech in a variety of voices from computer-readable printed text.
- Creating *How May I Help You?™* (HMIHY), the most robust, flexible, and conversational natural language speech understanding system in the world. HMIHY has completed a successful field trial and is now widely deployed to handle the majority of AT&T Consumer Services customer-care traffic through its 0300 access number.
- Playing a key role in planning the deployment of the Nationwide Intelligent Optical Network. AT&T is moving to a new, all-optical network by doubling the amount of information that can be sent over optical fiber each year. The new network restores service faster in the event of a failure or disaster and can dramatically shorten provisioning time for new high-speed circuits for business customers who have direct access to the network, among other advanced capabilities.
- Deploying IP-enabled frame relay capabilities, giving customers the advantages of IP connectivity with the reliability of the frame relay system.
- Developing data mining solutions that have helped AT&T reduce fraud and save customers money. New solutions based on enhanced fraud management tools allow customers to access call detail securely for any phone number through a Web-based interface.
- Launching AT&T's *Global Enterprise Management System (GEMS)*, a comprehensive network, systems, and applications management platform. GEMS allows for end-to-end network viewing, failure prediction, and diagnostics on a global scale. It provides a significant competitive edge for AT&T and its customers.
- Evolving AT&T's e-commerce site to help consumers and business customers purchase calling plans online while reducing customer care costs.
- Developing AT&T Visualization of Massive Data Sets, a network visualization tool that uses powerful computer graphics and data mining to integrate and explore network information and efficiently put this knowledge to work in the AT&T Network.

AT&T Labs will apply these innovations to improve the customer experience, evolve AT&T's IP communications network and services, automate corporate systems and operations, and advance the company's intelligent networking efforts.

Contributions that Benefit the Entire Industry

AT&T Labs is a nexus of Internet research. Labs researchers have taken leading roles in the work of the World Wide Web Consortium (W3C), helping to define standards and shape the future of the Internet. Labs researchers have led efforts in improving Internet security—for example, helping to protect the personal information of Web users, to identify vulnerabilities of wireless networks, and to trace the sources of the unauthorized copying that significantly impacts the movie industry:

- AT&T Labs has contributed to the development of the P3P protocol, which became an official recommendation of the W3C in the spring of 2002. The adoption of P3P by browsers and Web sites will pave the way for effective privacy protection such as AT&T's Privacy Bird™ software.
- With the growing use of wireless networks by businesses, AT&T Labs researchers such as Steve Bellovin have demonstrated the ease with which the security of these systems can be violated. Bellovin's work has spurred a drive for greater diligence in protecting the information being carried over such networks.
- Researchers at AT&T Labs and the University of Pennsylvania have concluded in a new study that 77% of all unauthorized copies of new and popular movies on file-sharing networks come from movie industry insiders and not consumers.

A Never-ending Commitment to Innovation

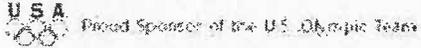
Although AT&T Labs is constantly evolving, its mission and philosophy will not change. AT&T Labs is committed to remaining the world's leading R&D center for communications and networking technologies, products, and services—focused on the success of AT&T and its business partners.

At AT&T Labs we are extremely proud of our pioneering history. This pride drives us to continue our pursuit of innovation. So, as rich as our history is, we believe the best is yet to come.

AT&T Natural Voices™ is a trademark and How May I Help You?SM is a service mark of AT&T Corp.

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