

WITH FREEDOM COMES RESPONSIBILITY: ENSURING THAT THE NEXT GENERATION OF TECHNOLOGIES IS ACCESSIBLE, USABLE AND AFFORDABLE*

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*"No one wants to regulate the Internet. But with freedom comes responsibility. So industry must meet its responsibility in the digital age . . . and . . . ensure that no American gets left behind."*¹

I. INTRODUCTION: PROVIDING ACCESS IN A CHANGING TECHNOLOGICAL AND REGULATORY ENVIRONMENT

A. The Access Imperative

The landscape of communications is changing dramatically. Being connected will not just be

about having phone and perhaps Internet service. It will mean broadband² delivery of increasingly converging services such as interactive voice, data and full motion video. Consumers will be able to receive these "always on" services in single boxes, on large screens, in small mobile devices, in their cars,³ in their household appliances,⁴ on their wrist watches⁵—perhaps even through fibers in their clothes.⁶ They will receive their services from providers using cable, digital subscriber lines ("DSL"), fiber, fixed wireless, satellite and laser technologies.⁷ And as networks become digital

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¹ William E. Kennard, Chairman, FCC, Address at The

10th Anniversary of the Americans With Disabilities Act, Torch Relay, Los Angeles, Cal. (June 19, 2000).

² In this paper, "broadband" and "future technologies" include but are not limited to the more precisely defined terms "advanced telecommunications capability," "advanced services," and "high-speed" services. In its latest report on the deployment of advanced telecommunications capability, the Commission defines advanced telecommunications capability and advanced services as infrastructure capable of delivering a speed of 200 kilobits per second ("kbps") in each direction, and high-speed services as those services with over 200 kbps capability in one direction. See *In re Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps To Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, Second Report*, 15 FCC Rcd. 20,913, 20,917, para. 8 (2000) [hereinafter *Second Advanced Services Report*].

³ See, e.g., *Study Shows That Cars And Internet Are Potent Mix*, ALLNETDEVICES, at http://www.allnetdevices.com/wireless/news/2000/04/07/study_shows.html (Apr. 7, 2000).

⁴ A study by Allied Business Intelligence states that the home networking market was \$134 million in 1999 but will be \$495 million by the end of the year and \$2.4 billion by 2005. *Home Networks Set to Take Off, Led by Net Devices*, ALLNETDEVICES, at <http://devices.internet.com/news/0005/000519homenet.htm> (May 19, 2000).

⁵ *IBM Develops Prototype of Wrist Watch Running Linux*, YAHOO! NEWS, at <http://www.wideopen.com/story/1157.html> (Aug. 7, 2000).

⁶ *Group Takes Next Step Toward Tiny Computers*, ABCNEWS.COM, at <http://www.abcnews.go.com/sections/tech/DailyNews/mollecules000818.html> (Aug. 18, 2000).

⁷ GLOBAL INTERNET PROJECT, CONVERGENCE AND CYBERSPACE: NEW CHALLENGES EMERGE 1, at <http://www.gip.org/publications/papers/gipwp20500.asp> (May 2000) [hereinafter CONVERGENCE AND CYBERSPACE].

end to end, a whole array of new services will emerge.⁸

It will be imperative that all Americans have access to the technologies of tomorrow. Our society has benefited greatly from policies that have promoted broad access to today's technologies. Due largely to state and federal universal service policies,⁹ over 94% of American households have telephone service.¹⁰ These programs have allowed those living in the farthest reaches in our country, and those with the lowest incomes, to be connected to this country's communications network, benefiting all users of the network.¹¹ The E-rate program, established pursuant to the universal service provisions in the Telecommunications Act of 1996 (the "1996 Act"),¹² also has connected our children to the Internet; the percentage of public schools that have Internet access has risen from 35% in 1994 to 95% in 1999, with 63% of all classrooms connected.¹³ E-rate funds have allowed remote places like Pago Pago, American Samoa, where it often takes six months just to get a

phone line, to have 1,000 high-speed, satellite-connected computers in its forty-six schools and one public library.¹⁴ And the Rural Health Care Program, also provided for under the 1996 Act, will provide over \$9 million in discounts for not-for-profit rural health care facilities in its first two years,¹⁵ enabling rural health care providers to have rates that are comparable to urban rates for similar services.¹⁶

It also is clear that laws passed to promote communications access to people with disabilities have made an enormous difference, particularly in the last ten years.¹⁷ In testimony to a Senate panel last summer, a deaf child who spends a great deal of time with his family in Israel spoke about how many more opportunities he has and how much easier his life is in the United States.¹⁸ Here, unlike Israel, he can use the Telecommunications Relay Service, which allows deaf people to make and receive phone calls to anyone in the world without the other person having a text telephone

⁸ See Comments of Level 3 Communications, *In re* Implementation of Sections 255 and 251(a)(2) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996, Access to Telecommunications Service, Telecommunications Equipment and Customer Premises Equipment by Persons with Disabilities, *Report and Order and Further Notice of Inquiry*, WT Dkt. No. 96-198, FCC 99-181, at 3 (Jan. 13, 2000); see also Comments of Trace/Gallaudet, *In re* Implementation of Sections 255 and 251(a)(2) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996, Access to Telecommunications Service, Telecommunications Equipment and Customer Premises Equipment by Persons with Disability, *Report and Order and Further Notice of Inquiry*, WT Dkt. No. 96-198, FCC 99-181, at 13-14 (Jan. 13, 2000) [hereinafter *Trace/Gallaudet Section 255 Comments*].

⁹ Some of the universal service programs that promote access include the high-cost program, which provides support to eligible telecommunications companies for some of the costs of providing service to rural and other high-cost areas; the Lifeline program, which reduces the monthly charges for qualifying low-income consumers; and the Link Up program, which provides support to reduce low-income consumers' initial connection charges. THE CONSUMER ENERGY COUNCIL OF AMERICA, UNIVERSAL SERVICE: TOWARDS A 21ST CENTURY PLATFORM 5-10, at <http://www.cecraf.org/projects/US/USforumproposal.pdf> (June 2000) [hereinafter *CECA UNIVERSAL SERVICE REPORT*].

¹⁰ FEDERAL COMMUNICATIONS COMMISSION, STATISTICS OF COMMUNICATIONS COMMON CARRIERS 228 (Aug. 11, 2000) available at http://www.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/socc.html. But penetration rates in certain areas are still significantly below the national average. For example, only 47% of Indian tribal households on tribal lands have a telephone. *In re* Federal-State Board on Universal Service; Promoting Deployment and Subscribership in Unserved and Underserved Areas, Including Tribal and Insular Areas, *Twelfth Report and Order, Memorandum Opinion and*

Order, and Further Notice of Proposed Rulemaking, 15 FCC Rcd. 12,208, 12,211-12, para. 2 (2000). In the last year, the Commission has implemented new rules and policies to address this problem, such as adopting new universal service policies that will substantially reduce the price of basic phone service for low-income customers on tribal lands and providing greater incentives for wireless carriers to serve tribal lands. See William E. Kennard, Chairman, FCC, Remarks Before the Indian Telecom Training Initiative, St. Paul, Minn., at <http://www.fcc.gov/Speeches/Kennard/2000/spwek021.html> (Sept. 28, 2000).

¹¹ Metcalfe's law provides that as networks grow, the utility of being connected to the network grows exponentially. FCC, OPP WORKING PAPER 29, DIGITAL TORNADO: THE INTERNET AND TELECOMMUNICATIONS POLICY 6 (authored by Kevin Werbach) (1997), available at <http://www.fcc.gov/opp/workingp.html>.

¹² Pub. L. No. 104-104, 110 Stat. 56 (codified in scattered sections of 47 U.S.C.).

¹³ NATIONAL CENTER FOR EDUCATION STATISTICS, INTERNET ACCESS IN U.S. PUBLIC SCHOOLS AND CLASSROOMS: 1994-1999, at <http://www.NCES.ed.gov> (Feb. 2000).

¹⁴ Jeri Clausing, *With Project Expanding Net's Reach, There Are No Strangers in Paradise*, N.Y. TIMES, July 13, 2000, at G8.

¹⁵ *Second Advanced Services Report*, 15 FCC Rcd. at 20,980, para. 175 (quoting the Universal Service Administrative Company's 1999 Annual Report to Congress and the FCC: Reaching and Connecting American (Mar. 31, 2000)).

¹⁶ 47 U.S.C. § 254(h)(1)(B) (1994 & Supp. IV 1999).

¹⁷ William E. Kennard, *FCC Chairman Recognizes National Disability Awareness Month*, at <http://www.fcc.gov/dif/wek-disability.html> (last visited June 11, 2001).

¹⁸ *The Americans with Disabilities Act ("ADA"): Opening the Doors to the Workplace, Hearing Before the Senate Comm. on Health, Education, Labor, and Pensions*, 107th Cong., at <http://www.senate.gov/~labor/hearings/july00hr/07260pwt/07260pwt.htm> (2000).

("TTY"),¹⁹ and watch television and cable programming with closed captions on any television set.²⁰ Section 255²¹ of the 1996 Act has helped to ensure that new telecommunications products will contain features, such as distinctively shaped buttons, adjustable fonts, vibrating ringers and nubs on five keys, that will make these products easier for people with disabilities to use. As mandated by Section 508²² of the Rehabilitation Act Amendments of 1998, government agencies are now in the process of making the electronic products they use, including their Web pages, accessible to people with disabilities.²³

As important as providing access to today's technologies has been, it will be even more important to provide access to the broadband technologies of the future. Doing so will ensure that all Americans fully share the benefits of the information age at a time when communication is becoming an ever more central and critical part of our lives. As 3Com Chairman Eric Benhamou has stated:

[Information technology ("IT")] access and IT skills are no longer an option but an essential requirement for functioning in modern society and becoming a full

¹⁹ The Telecommunications Relay Service ("TRS"), established pursuant to Title IV of the Americans with Disabilities Act of 1990 and available on a uniform, nationwide basis since July 26, 1993, enables persons with hearing and speech disabilities to communicate by telephone with persons who may or may not have such disabilities. TRS Centers are staffed by Communications Assistants ("CAs") who relay conversations between people who use a TTY and people who communicate by voice. See *In re Telecommunications Relay Services and Speech-to-Speech Services for Individuals with Hearing and Speech Disabilities, Report and Order and Further Notice of Proposed Rulemaking*, 15 FCC Rcd. 5140, 5141-42, paras. 1-2 (2000).

²⁰ The Television Decoder Circuitry Act of 1990 requires that television receivers with picture screens 13 inches or larger contain built-in decoder circuitry designed to display closed-captioned television transmissions. In July 2000, the Commission amended its rules to require closed-captioning display capability in digital television receivers. See *In re Closed Captioning Requirements for Digital Television Receivers; Closed Captioning and Video Description of Video Programming, Implementation of Section 305 of the Telecommunications Act of 1996, Video Programming Accessibility, Report and Order*, 15 FCC Rcd. 16,788, 16,788-89, para. 3-4 (2000).

²¹ 47 U.S.C. § 255 (1994 & Supp. IV 1999).

²² 29 U.S.C. § 794(d) (1994 & Supp. IV 1999).

²³ See Carrie Johnson, *Agencies Act to Ease Internet Use by Disabled*, THE WASHINGTON POST, Aug. 24, 2000, at A23 [hereinafter Johnson]. People with disabilities are much less likely than people without disabilities to have Internet access and to use computers. According to a report last year by the Department of Commerce, people who have a disability are only half as likely to have access to the Internet compared to those

participant in the new economy. We should think of it in the same fundamental way as two centuries ago, when people thought of the skills of reading, writing, and counting.²⁴

But perhaps even more critically, access to broadband and future technologies has the potential to help underserved communities even more than anyone else because the technologies have the potential to bridge gaps and provide opportunities that were inconceivable in the past. Broadband may allow inner city school children whose schools have no budget to take even the shortest field trips to take a real-time virtual tour of the best museums in the world. Broadband may allow Indian communities, who have seen too many of their people die in emergency situations because they did not even have basic phone service,²⁵ to have access to doctors who can provide diagnoses and services remotely.²⁶ And broadband may allow people who are deaf to use sign language over distances, enabling them, as Trace/Gallaudet note, "to see the speaker (lip reading and facial expression) to fully understand conversation."²⁷

Clearly, in the digital age, it will be more impor-

without a disability (21.6% versus 42.1%). In addition, close to 60% of people with disabilities have never used a personal computer, while 25% of people without disabilities have never used a computer. U.S. DEPARTMENT OF COMMERCE, FALLING THROUGH THE NET: TOWARD DIGITAL INCLUSION 61, available at <http://search.ntia.doc.gov/pdf/fttn00.pdf> (Oct. 2000) [hereinafter TOWARD DIGITAL INCLUSION].

²⁴ Press Release, 3Com, 3Com CEO Eric Benhamou Provides Keynote Address on Digital Divide For Commonwealth Club of Silicon Valley, at <http://www.3com.com/news/releases/pr00/jul2000a.html> (July 19, 2000).

²⁵ Rea Howarth, *Getting Connected: Bridging the Telecommunications Divide in Indian Country*, AMERICAN INDIAN REPORT, Mar. 2000, at 12.

²⁶ See generally *In re Amendment of Parts 2 and 95 of the Commission's Rules to Create a Wireless Medical Telemetry Service, Report and Order*, 15 FCC Rcd. 11,206 (2000).

²⁷ Access to broadband will open up a myriad of other possibilities for people with disabilities as well. See *Trace/Gallaudet Section 255 Comments*, supra note 8, at 13-15. Trace and Gallaudet note, for example, that two or more parties who have screens and keyboards could carry on text conversation as well as voice conversation, permitting direct communications among deaf and hearing-impaired people without the use of a relay service. *Id.* at 14. Video phone conversations would allow people who are hard of hearing to read lips and see facial expressions, and also would allow people to better understand people with speech disabilities because they could see their facial expressions and gestures. *Id.* Interpreters, captioners and speech-to-speech assistants could be conferenced in on multimedia calls. *Id.* at 15. Trace and Gallaudet believe that people who are deaf eventually will be able to use speech recognition to see voice conversations, in much the same way that people who are blind can use speech

tant than ever that no American gets left behind. Some may ask what can be done now at this early stage of deployment of new technologies, when, for example, broadband technologies have penetrated less than 2% of American households,²⁸ and when it is unknown which technologies will emerge as the winners and losers. But much needs to be done if the vision of leaving no American behind in the digital age is to become a reality. Specifically, now is the time to be concerned with three components of access: technical accessibility, usability and affordability. If the technologies of tomorrow are to be technically accessible to all Americans, then those who are designing and developing new products and networks must work together and consider how to make their products accessible to people with disabilities. If new technologies are going to actually be usable by all Americans, then those designing and developing new technologies must understand the special challenges faced by educators; community leaders in rural, urban and other underserved areas; and people with disabilities. Finally, if the next generation of critical technologies is going to be affordable to all Americans, then those who may be providing those services and sharing in the responsibility of making the services affordable should help fashion an efficient and equitable universal service policy for the future.

How will society ensure that the next generation of communications is, broadly speaking, accessible—that is, technically accessible, usable and affordable? Ideally, access to tomorrow's technologies should be provided without resorting to yesterday's regulatory tools. Rather, a new model is needed that will allow society to meet its access goals in a way that recognizes the benefits of regulatory freedom. The purpose of this article is to promote a discussion about what this new model should look like and how it should be achieved among industry (including those who traditionally have not been regulated); consumers; educa-

tors; local, state and federal policy-makers; and other stakeholders.

B. The Promise of Regulatory Freedom

The explosive development of the Internet underscores why a general policy of not regulating new technologies will be so important. Over the last generation, the Federal Communications Commission ("FCC" or the "Commission") has taken steps to ensure that the Internet could grow and that industry could innovate without the constraints of regulation.²⁹ One of the ways in which the FCC sheltered the Internet from regulation was to distinguish computer applications over the telecommunications network, known as "enhanced" services, from phone or "basic" services.³⁰ "Basic" services (later designated "telecommunications services" in the 1996 Act) were subject to the full panoply of Title II regulation; "enhanced" services (later designated "information services" in the 1996 Act) stayed completely unregulated.³¹ The FCC also has deregulated the telecommunications equipment market and allowed users to connect their own terminal equipment, which helped to foster the widespread deployment of the modem.³² Furthermore, enhanced service providers were exempted from the access charges paid by interexchange carriers, which, in turn, has allowed Internet Service Providers ("ISPs") to charge low monthly fees.³³

The Internet has flourished under this model of unregulation. Between December 1998 and August 2000, for example, the share of U.S. households with Internet access rose by 58%, from 26.2% to 41.5%.³⁴ This jump has been fueled by lower prices for hardware, and the emergence of free ISPs and affordable broadband service.³⁵ A study funded by Cisco Systems found that the Internet industry generated nearly \$524 billion in revenue in 1999, an increase of 62% from a year earlier.³⁶ The Internet is changing the way in

synthesis to read e-mail now. *Id.*

²⁸ *Second Advanced Services Report*, 15 FCC Rcd. at 20,942, para. 70.

²⁹ See generally FCC, OPP WORKING PAPER 31, THE FCC AND THE UNREGULATION OF THE INTERNET (authored by Jason Oxman) (1999), available at <http://www.fcc.gov/opp.workingp.html> [hereinafter UNREGULATION OF THE INTERNET].

³⁰ *Id.* at 10.

³¹ *Id.* at 9.

³² *Id.* at 16.

³³ *Id.*

³⁴ TOWARD DIGITAL INCLUSION, *supra* note 23, at xv, 2.

³⁵ Ben Charny, *More U.S. Households Online than Not*, YAHOO! NEWS/ZDNET NEWS, at <http://daily.news.yahoo.com> (Aug. 17, 2000).

³⁶ CISCO SYSTEMS AND THE UNIVERSITY OF TEXAS, MEASURING THE INTERNET ECONOMY 2, at http://www.internetindicators.com/june_full_report.PDF (June 6, 2000).

which we learn, work, shop and communicate with our colleagues, friends and family, and, in short, is quickly becoming the most important communications medium ever.³⁷

It will not be enough, however, to recognize the importance of regulatory freedom for the Internet and new technologies. Generally speaking, future policies also must acknowledge that the distinctions between regulated and unregulated services are blurring, and, that as this continues, these services should be treated with regulatory parity. The regulatory wall between "basic/telecommunications" services and "enhanced/information" services may have allowed the Internet to grow unfettered but it quickly is becoming unworkable in the age of convergence as the regulatory challenges posed by Internet telephony demonstrate.³⁸ And, of course, there are many other examples of converging services that do not fit neatly into traditional regulatory boxes, including: Internet services delivered over digital assistances ("PDAs") and cable modems; Internet services delivered over telephone lines to television sets via systems like Web TV; and radio and TV programming webcast on the Internet.³⁹

As the world becomes more digital, as more compression techniques develop, as computing power increases and as broadband networks deploy, more services and combinations of services will cut across traditional regulatory lines.⁴⁰ Service providers will offer a mix of services, some of them traditionally regulated, some of them not. Generally speaking, it will not make sense (and

will cause economic distortions) to treat circuit-switched telephony providers differently than IP telephony providers, data providers and video programming providers.⁴¹ Furthermore, the traditional notice and comment rulemaking process, in which it can take months, if not years, to promulgate rules, will probably be less and less able to adjust to the rapid pace of technological change, the short time-to-market in an increasingly competitive market, and the complexities resulting from the sheer number and different kinds of entities providing services.

In this rapidly changing and increasingly competitive and converging environment, the Commission's general approach will be to avoid regulating new services and to deregulate currently regulated services as they become competitive with and converge with new services. This will be part of a larger transition that the Commission is undertaking over the next five years as it shifts from a role of "industry regulator" to "market facilitator."⁴² Rather than automatically resorting to the rulemaking process, the Commission is looking more and more to industry to make the first attempt at solving complex technical and policy problems. For example, at then Chairman Kennard's urging, last year the Consumer Electronics Association and the National Cable Television Association reached agreement on at least some of the issues that are delaying the ability of consumers to receive the benefits of digital programming on their cable systems.⁴³ The Commission also encouraged a coalition of long-distance

³⁷ UNREGULATION OF THE INTERNET, *supra* note 29, at 4.

³⁸ Indeed, the classification of Internet telephony has caused challenges both with respect to universal service and to disability access. *In re* Federal-State Joint Board on Universal Service, *Report to Congress*, 13 FCC Rcd. 11,501, 11,510, para. 14 (1998) [hereinafter *Universal Service Report to Congress*]. The *Universal Service Report to Congress* states that:

The record currently before us suggests that certain forms of 'phone-to-phone' IP telephony services lack the characteristics that would render them 'information services' within the meaning of the statute, and instead bear the characteristics of 'telecommunications services.' We do not, however, believe it is appropriate to make any definitive pronouncements in the absence of a more complete record focused on individual service offerings.

Id.; see also *In re* Implementation of Sections 255 and 251(a)(2) 251(a)(2) of the Communications Act of 1934, as Enacted by the Telecommunications Act of 1996, Access to Telecommunications Service, Telecommunications Equipment and Customer Premises Equipment by Persons with Disabilities, *Report and Order of Further Notice of Inquiry*, WT Dkt. No. 96-198, FCC 99-181, para. 173 (rel. Sept. 29, 1999)

[hereinafter *Section 255 Order*]. The *Section 255 Order* states that:

There is a vast array of communications-related services available today that are not covered by these rules . . . We must ensure that the disability community is not denied access to innovative new technologies, for example Internet and computer-based services, that may become complements to, or even replacements for, today's telecommunications services and equipment.

Id. at para. 173.

³⁹ CONVERGENCE AND CYBERSPACE, *supra* note 7, at 1.

⁴⁰ *Id.*

⁴¹ See *Trace/Gallaudet Section 255 Comments*, *supra* note 8, at 9.

⁴² FEDERAL COMMUNICATIONS COMMISSION, REPORT CARD ON IMPLEMENTATION: DRAFT STRATEGIC PLAN—A NEW FCC FOR THE 21ST CENTURY I (Mar. 2000).

⁴³ Press Release, Federal Communications Commission, Statement of FCC Chairman William E. Kennard: Industry Agreement Will Jump Start Digital Television, at <http://www.fcc.gov/Speeches/Kennard/Statements/2000/stwek013.html> (Feb. 23, 2000).

and local exchange companies (the Coalition for Affordable Local and Long-Distance Services or CALLS) to submit a plan to revise the current access charges and universal service rules, which then became the basis for a Commission order.⁴⁴ The Commission also has created an Enforcement Bureau and Consumer Information Bureau in recognition of the importance of organizing the Commission by function rather than by traditional regulatory areas, and of facilitating market solutions through outreach at the front end and enforcement on the back end.⁴⁵

Will the imperative of making the next generation of technologies technically accessible, usable and affordable be accomplished in a way that is consistent with the Commission's overall deregulatory and unregulatory approach? Some may think that competitive forces alone will not be enough to ensure that the access problems of tomorrow will be adequately addressed—and that some form of regulation will be necessary. Others may think that any form of regulation will prevent new services from reaching the marketplace and will keep industry from addressing new access challenges in the most flexible and innovative way. One thing we do know: if there is going to be a new model that will allow society to meet its access goals in a way that recognizes the benefit of regulatory freedom, then it is not only the Commission that must prepare for a new role in the coming years. Industry, both individual companies and collectively, must take responsibility and ensure that no American gets left behind. The rest of this article lays out in more detail what industry must do if full access to tomorrow's technologies is to be provided without relying on the traditional regulatory process.

II. INDUSTRY'S RESPONSIBILITY

"To speak with a human voice, companies must share the concerns of their communities. But first they must belong to a community. Companies must ask themselves where their corporate cultures end. If their cultures end before the community begins, they will have no market."

—Theses 34–37, *The Cluetrain Manifesto*

A. New Role for Industry

There are numerous reasons why industry should be concerned with making the next generation of technologies accessible, usable and affordable. Certainly addressing access concerns will help stave off government regulation. Addressing access concerns also will enable industry to tap into a vast new market of unserved communities—whether it is a school child who is finally taught IT skills or a blind person who can finally use her wireless PDA to access the Internet. And the more widely accessible a product is, the more valuable it is to all customers. This is true in the case of the network generally, and also is true for products designed to be accessible to people with disabilities that have great mass market appeal (such as vibrating pagers and speaker phones).⁴⁶

Industry also must care about the concerns of the broader community if it is going to relate to and keep its customers in the Internet age. This, at least, is a premise of *The Cluetrain Manifesto*,⁴⁷ a recent book by four Internet gurus (Rick Levine, Christopher Locke, Doc Searls and David Weinberger) that has gotten attention in high-tech and business circles.⁴⁸ It offers some insights about how and why companies must act differently and more responsively in the Internet age.⁴⁹ One of

⁴⁴ Press Release, Federal Communications Commission, FCC Reduces Access Charges By \$3.2 Billion: Reductions Total \$6.4 Billion Since 1996 Telecommunications Act, at http://www.fcc.gov/Bureaus/Common_Carrier/News_Releases/2000/nrcc0029.html (May 31, 2000).

⁴⁵ Press Release, Federal Communications Commission, FCC Reshapes the Future—Establishes New Enforcement and Consumer Information Bureaus to be Effective November 8, 1999, at http://www.fcc.gov/cb/News_Releases/reorg.html (Oct. 26, 1999).

⁴⁶ *Section 255 Order*, *supra* note 38, at para. 7.

⁴⁷ See RICK LEVINE ET AL., *THE CLUETRAIN MANIFESTO* xii (2000) [hereinafter LEVINE]. See generally *THE CLUETRAIN*

MANIFESTO, at <http://www.cluetrain.com>.

⁴⁸ See Lisa G. Everitt, "Cluetrain" Pulls into the Station: Irrelevant Book Strikes a Responsive Chord on E-Commerce Dichotomy, DENVER ROCKY MOUNTAIN NEWS, Jan. 31, 2000, at 4B; *E-commerce Experts Endorse Cluetrain Manifesto; Forthcoming Book Heralds End of Business As Usual*, BUS. WIRE, Dec. 15, 1999 ("The *Cluetrain Manifesto* is about to drive business to a full boil. Recall what the *Jungle* did to meat packing, what *Silent Spring* did to chemicals, what *Unsafe at Any Speed* did to Detroit. That's the spirit with which the *Cluetrain Manifesto* takes the arrogance of corporate e-commerce.")

⁴⁹ LEVINE, *supra* note 47, at xi–xii.

the major theses of the book is that if corporations are going to survive, they need to adjust to the realities of how the rise of the Internet and intranet are changing the way corporations communicate and work externally and internally.⁵⁰ On the Internet, people are having open, real and human conversations about what is relevant to them, including products and services in the marketplace—and that information is traveling at lightning speed. As a result, markets are much smarter now and much too sophisticated to respond to one-way public relations “happy talk”—or as the authors say, “companies that speak in the language of the pitch, the dog-and-pony show, are no longer speaking to anyone.”⁵¹

What the authors recommend to companies is that they tear down the firewall that separates their corporation from the outside market and join the real conversations in the networked market. In the old world, companies saw marketing as a public relations project—mission statements, brochures, press releases and jingles. In today’s world, companies need to let their employees really communicate with their customers—be honest with them and responsive to their concerns—and not try to “trick” them into buying a product. Today’s knowledgeable consumers will not give companies a second chance.

Similarly, companies will have to change the way they communicate about and respond to access problems if they are going to build consumers’ trust. Their task is more than figuring out the minimal action necessary to be compliant with a law or regulation. In today’s world, companies must concern themselves with the challenges facing our communities. They must develop real and sustained conversations with their customers, including consumers with disabilities, educators and community leaders. They must respond to their customers’ concerns, or at least explain clearly what the company can do and when it can do it. And companies must make sure that their employees working on access issues have the high-level support and the ability to pull resources from throughout the company, so that they can be responsive.

The experience of the TTY Forum (“Forum”), an industry forum established three years ago to determine how to make TTYs compatible with digital wireless phones, shows both the difficulties of the old corporate mentality and the promises of the new breed of corporate problem solver.⁵² The Forum consists of wireless service providers, wireless phone manufacturers, TTY manufacturers, relay providers and consumers representing those who have hearing disabilities. The Forum was formed after the Commission mandated in 1996 that wireless service providers be able to pass the tones of TTYs for purposes of making 911 calls.⁵³ Analog wireless phones were able to meet this requirement, but TTY calls got garbled in the digital network. The Commission encouraged industry to work out a solution, rather than trying to mandate a specific technical solution itself.⁵⁴

In some ways, particularly early in the process, this experiment in letting industry take the lead in addressing an access problem was a frustrating experience for nearly all who were involved. Generally speaking, the Forum was slow to get started and did not really appear to be motivated to solve the problem until a high-level official from the Commission started attending its meetings, and the Chairman and other Commissioners started expressing concern about the Forum’s lack of progress.

In other ways, though, something exciting and different has emerged from this process: a sharing of information and spirit of cooperation that has made a real difference in the Forum’s work. There were some key corporate employees who were clearly empowered to work on behalf of their corporation but whose concerns went beyond that of their corporation. Their main focus was working with consumers and others in industry to solve the problem, and their conversations—and actions—reflected this. Some were the engineers who actually came up with the technical solutions that will allow digital wireless phones to pass TTY tones.⁵⁵ Some were the policy-makers who pushed their own company and their vendors to make deadlines that others in industry said were impossible to make. These kinds of people

⁵⁰ *Id.* at xix.

⁵¹ *Id.* at xiii.

⁵² See *In re Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Order, 13 FCC Rcd. 21,746, 21,746–48, paras. 2–4 (1998).

⁵³ *Id.*

⁵⁴ See *In re Revision of the Commission’s Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Memorandum Opinion and Order, 12 FCC Rcd. 22,665, 22,686–87, para. 43 (1997).

⁵⁵ To date, the TTY Forum’s collaborative—and compet-

will be critical to industry's efforts to take the lead in solving the access problems of tomorrow. More and more in this age, corporate employees—people who understand the inner workings of companies, the technology of their products and the broader policy concerns trying to be addressed—will play an indispensable role in the efforts to make all the connections necessary to produce a solution.

So if industry is going to address the next generation of access problems, and do so in an unregulated environment, first and foremost, it must truly adopt the concerns of the broader community as its own. Individual companies must commit to make access issues a real priority in their company with the support of management at the top levels. Three high-tech CEOs recently have called on their industry to exhibit more leadership to close the digital divide. Eric Benhamou, chairman and CEO of 3Com Corporation, who led an online discussion on the digital divide at an event sponsored by the Commonwealth Club, stated that "I don't think there's been a strong voice on this topic coming from . . . [the high-tech] industry. But . . . [w]ith sufficient focus and attention, the problem will get solved."⁵⁶ At a recent Aspen Institute Conference, Time Warner CEO Gerald Levin called on high-tech leaders to "channel their social convictions through their companies . . . There's a vacuum of leadership right now."⁵⁷ And to a standing ovation at the same conference, Hewlett-Packard's CEO Carly Fiorina recently challenged industry to "produce 'digital Medicis' with interest in reforming society as well as making money."⁵⁸

Of course, it will take more than the commitment of individual companies to change their internal processes to address the next generation of access problems. The problems that industry needs to address are complicated, and require cooperation and coordination among all those who

are relevant to providing the next generation of services. Such an effort will have to be led by industry and governed by a consortium of trade associations representing all industry interests relevant to the issues, including providers of voice, video and data services; backbone and other network providers; equipment manufacturers; software manufacturers; and content providers. Key participants in any collaborative effort must include consumers with disabilities, educators, community leaders, employers, and local, state, and federal policy-makers. These stakeholders will be critical in identifying the issues that need to be addressed, working with industry to devise solutions, monitoring progress and determining how solutions should be implemented.

Industry will face numerous challenges in its efforts to ensure that the next generation of technologies will be accessible, usable and affordable. There are some ongoing industry efforts, both individual and collective, from which to build in each of these areas, as discussed in more detail below. Industry will have to determine whether it should coordinate and expand existing efforts, such as the numerous forums, standards groups, advisory councils, initiatives, listserves, and public-private partnerships to meet these goals—or whether it should create a new, broadly based collaborative forum. What is critical, though, is that industry makes a collective and high-level commitment to solve the access problems of tomorrow. Industry also must be able to guard against "free-rider" problems and ensure that all relevant companies and industry segments contribute to the effort. Finally, industry must do more than identify problems (as some advisory councils and forums have done) or even identify solutions (as some standards groups have done). If industry wants to avoid regulation altogether, it must ensure that its solutions are fully implemented as well.

itive—environment has yielded some major solutions that will allow digital wireless phones to pass TTY tones. In early 1999, Lucent Technologies presented to the Forum a potential solution to the TTY/digital problem. The Lucent solution subsequently was approved by the Telecommunications Industry Association ("TIA") Subcommittees TR45.5 (CDMA) and TR45.3 (TDMA) standards bodies. In addition, Ericsson has proposed a solution that has been adopted by the GSM standards body, which is awaiting final adoption. Motorola is currently working on a solution for its proprietary iDEN technology. *In re* Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emer-

gency Calling Systems, *Fourth Report and Order*, 15 FCC Rcd. 25,216, 25,217, para. 3 [hereinafter *Fourth E-911 TTY Order*]. In a recently adopted order, the Commission set a June 30, 2002 deadline for all digital wireless carriers to implement a solution that will allow digital wireless phones to pass TTY tones. *Id.* at 25,218, para. 6.

⁵⁶ *Q&A: Eric Benhamou on Building Online Communities*, SILICON VALLEY NEWS, at <http://www0.mercurycenter.com/svtech/news/indepth/docs/qa071700.htm> (July 16, 2000).

⁵⁷ *TW's Levin Says Tests Can Prove Value of Cable Open Access*, COMM. DAILY, Aug. 22, 2000, at 4.

⁵⁸ *Id.* at 3.

B. Ensuring That Products Are Technically Accessible

One of the biggest challenges—and one that industry will need to address early—is ensuring that tomorrow’s technologies are accessible to people with disabilities. It is critical for industry to consider how to make their products and networks accessible to people with disabilities in the design and development stage, rather than trying to retrofit a product with an accessibility solution after the product is on the market, when it is much more expensive to do so. There are numerous examples of accessibility problems that could have been easily avoided if considered at the design and development stage, but that are now difficult to address. Industry has spent an enormous amount of time and money over the last few years trying to make digital wireless phones and TTYs compatible. Similarly, industry is now just beginning to consider how to make interactive voice response (“IVR”) services and voicemail usable to deaf consumers or other consumers with disabilities—long after these services have been deployed.⁵⁹ Pursuant to Section 508,⁶⁰ discussed below, the federal government is also spending an enormous amount of money and time to redesign its web pages to make them accessible to people with disabilities.⁶¹

Some companies, such as Microsoft, Motorola, Cingular and Verizon already have established accessibility policies in place.⁶² These policies pro-

vide for the consideration of access issues early and throughout the product design and development process; and for the use of advisory councils, task forces, and focus groups to solicit and respond to consumer concerns.⁶³ And more and more companies are recognizing the importance of undertaking these activities. In September, for example, the CEOs of over forty-five high-tech companies, including America Online, Compaq, eBay, Hewlett Packard and Sun Microsystems, wrote to President Clinton a pledge to adopt “best practices” to promote accessibility.⁶⁴ These CEOs focused their discussion on the training of their workers to develop accessible products and services, and on identifying and solving accessibility problems in new versions of their hardware and software.⁶⁵

And, of course, some in industry have considered how to make their products accessible because they are required under law to do so. Section 255 of the 1996 Act requires that telecommunications service providers and equipment manufacturers make their products accessible, if readily achievable.⁶⁶ Under regulations adopted by the Commission last year, telecommunications service providers and equipment manufacturers (as well as interactive voice response and voicemail service providers, and equipment manufacturers⁶⁷) must develop a process to evaluate the accessibility, usability, and compatibility of their services and equipment.⁶⁸ And Section 508

⁵⁹ Trace/Gallaudet Section 255 Comments, *supra* note 8, at 8. Gallaudet University, the Association of Access Engineering Specialists (“AAES”) and the Rehabilitation Engineering Research Center (“RERC”) sponsored an industry meeting on June 6–7, 2000, at Gallaudet University for “companies interested in understanding both the barriers and the solutions” to making interactive voice response systems accessible. ASSOCIATION OF ACCESS ENGINEERING SPECIALISTS, ACCESSIBLE VOICE SYSTEMS AND SERVICES: TTY AND OTHER ACCESSIBILITY ISSUES WITH VOICE MAIL AND AUDIOTEXT, JUNE 6–7, 2000 MEETING 1, at http://www.access-aes.org/ivr_accessibility_workshop_-_000606.html (last visited May 2, 2001).

⁶⁰ Rehabilitation Act § 508, 29 U.S.C. § 794d (1994 & Supp. V 1999).

⁶¹ See Johnson, *supra* note 24, at 23 (noting that the federal government will spend between \$85 million to \$691 million making its websites and other technologies accessible to people with disabilities).

⁶² See Reply Comments of Microsoft Corp., *In re* Implementation of Section 255 of the Telecommunications Act of 1996; Access to Telecommunications Services, Telecommunications Equipment, and Customer Premises Equipment by Persons with Disabilities, *Notice of Proposed Rulemaking*, 13 FCC Rcd. 20,391, at para. 1 (rel. Aug. 14, 1998).

⁶³ See *id.*

⁶⁴ Press Release, The White House, Next Stop on President Clinton’s “Digital Divide” Trip: Digital Opportunity For Americans With Disabilities, at <http://www.nara.gov> (Sept. 21, 2000); see also Letter from Technology Executives to President Clinton, at http://www.fcc.gov/cib/dro/Clinton_letter.doc (Sept. 21, 2000).

⁶⁵ Press Release, The White House, Next Stop on President Clinton’s “Digital Divide” Trip: Digital Opportunity For Americans With Disabilities, at <http://www.nara.gov> (Sept. 21, 2000); see also Letter from Technology Executives to President Clinton, at http://www.fcc.gov/cib/dro/Clinton_letter.doc (Sept. 21, 2000).

⁶⁶ 47 U.S.C. § 255(a)(2), (b)–(c).

⁶⁷ Voicemail and interactive voice response services are not technically telecommunications services. The Commission, however, asserted its ancillary jurisdiction to cover these services under the statute. Additionally, the court of appeals upheld the Commission’s ancillary jurisdiction “because the Commission’s judgment on how the public interest is best served is entitled to substantial judicial deference.” *Section 255 Order*, *supra* note 38, at paras. 93–95.

⁶⁸ See *id.* at paras. 21–36. Accessibility “generally refers to the incorporation of specific features in products and ser-

of the Rehabilitation Act Amendments of 1998 provides a great incentive for companies to make their electronic and information products accessible. Under Section 508, the federal government may not procure, develop, maintain, or use electronic or information technology—such as federal websites, telecommunications, software, hardware, printers, fax machines, copiers and information kiosks—that is inaccessible to people with disabilities, unless following this mandate would create an “undue burden.”⁶⁹

Several industry groups are currently trying to address certain access problems. The World Wide Web Consortium (“W3C”) is an international forum consisting of nearly 400 member organizations that develop technologies for the Web.⁷⁰ One of the W3C’s four subgroups is the Web Accessibility Initiative (“WAI”), which has developed three sets of accessibility guidelines: one for websites; one for the software that website designers use when they build websites; and one for browsers and multimedia players.⁷¹ International standards groups also have been active in certain areas. Working groups in the International Telecommunications Union (“ITU”) and the Internet Engineering Task Force (“IETF”), for example, have been developing recommendations and standards to ensure that the emerging multi

media, IP networks are compatible with TTYs.⁷²

In addition, a Government Services Administration (“GSA”) funded group, the Accessibility Forum, held its first meeting on May 11, 2001. The Accessibility Forum, which includes users, industry and government stakeholders, will, according to its mission statement, “identify, prioritize, and conduct projects that assist government in making informed decisions about Section 508 related procurement, and allow government, industry, and users to communicate and highlight areas where further effort is needed.”⁷³

It is too early to evaluate the work of the Accessibility Forum, but this may prove to be a model for future collaborative efforts. We also know that existing laws, standards and guidelines, as exemplary as they may be, are not sufficient to ensure that all of the critical technologies of tomorrow will be accessible. First, industry must do more than write accessibility standards and guidelines—it must fully implement them.⁷⁴ Industry also will have to ensure that the mechanisms it developed to address accessibility issues are fast and flexible enough to adjust to the rapid pace of change. This can be a challenge for standards bodies, as the lengthy and ongoing process for developing a standard to make digital wireless phones compatible with hearing aids illustrates.⁷⁵ The European

vices that will allow people with disabilities to access those products.” *Id.* at para. 23. Usability “generally refers to the ability of people with disabilities to learn about and operate those features effectively.” *Id.* Compatibility under Section 255 means that equipment manufacturers and service providers are required, to the extent readily achievable, to ensure that their products are “compatible with existing peripheral devices or specialized customer premises equipment commonly used by individuals with disabilities to achieve access, where readily achievable.” *Id.* at para. 31 (quoting 47 U.S.C. § 255(d)).

⁶⁹ 29 U.S.C. § 794d(a)(1). The Access Board, an independent federal agency devoted to accessibility for people with disabilities, issued final standards for electronic and information technology under Section 508 of the Rehabilitation Act on Dec. 21, 2000. See generally Access Board, at <http://www.access-board.gov> (last visited June 12, 2001) [hereinafter Access Board]. On Apr. 25, 2001, the Department of Defense, the GSA, and the National Aeronautics and Space Administration published a final rule, amending the Federal Acquisition Regulation (“FAR”), to implement Section 508. See generally Federal IT Accessibility Initiative, at <http://www.section508.gov> (last visited June 12, 2001).

⁷⁰ See generally World Wide Web Consortium (“W3C”), at <http://www.w3.org> (Mar. 27, 2001).

⁷¹ See generally Web Accessibility Initiative (“WAI”), at <http://www.w3.org/WAI> (last visited May 12, 2001). The Web Content Accessibility Guidelines were released on Nov. 6, 2000; the Authoring Tool Accessibility Guidelines were re-

leased on Feb. 3, 2000; and The User Agent Accessibility Guidelines will be released, pending the completion of the W3C review process. *Id.*

⁷² See generally Gunnar Hellstrom, Total Conversation and Text Telephony in the IP Revolution, Address Before the VON coalition meeting with Accessibility Actors and the FCC, Washington, D.C. (Dec. 13, 1999).

⁷³ See generally Accessibility Forum, at <http://adit.atcorp.org/index.html> (last visited June 12, 2001).

⁷⁴ Industry has not committed on a widespread basis to adopt either the WAI’s accessibility guidelines or the ITU’s recommendations. See *The Applicability of the Americans with Disabilities Act (ADA) to Private Internet Sites: Hearing Before the Subcomm. on the Constitution of the House Comm. on the Judiciary*, 106th Cong. 48–51 (2000) (statement of Judy Brewer, Director, Web Accessibility Initiative International Program Office, World Wide Web Consortium), available at <http://www.house.gov/judiciary/brew0209.htm>; *Trace/Gallaudet Section 255 Comments*, *supra* note 8, at 17.

⁷⁵ See Letter from the Wireless Access Coalition to the Secretary of the FCC, *In re* Section 68.4(a) of the Commission’s Rules, Hearing Aid-Compatible Telephones, RM-8658, at 2 (Oct. 7, 2000); see also *Trace/Gallaudet Section 255 Comments*, *supra* note 8, at 16. It is not just standards bodies who face this challenge—the TTY Forum is struggling to stay current as well. As noted before, industry has been working for years on a solution to make digital wireless phones compatible with TTYs and is in the process of implementing at least two solutions. At the same time, however, the use of TTYs

Commission, in fact, is exploring alternative mechanisms to the current international standards bodies, such as high-tech consortia that would “promote the establishment of quick procedures, open workshops, and other means.”⁷⁶

Industry also will have to address a wide range of accessibility issues in a coordinated, high-level effort that would include representatives from all the relevant industries as well as consumer and government stakeholders. Equipment manufacturers, software manufacturers, service providers, network providers and content providers would all have to work together on many, if not most, accessibility issues. Accessibility problems are getting more and more complex and devising solutions will depend upon cooperation among all of the above industry segments. As technology evolves, entities that have not had to think about accessibility will have to start. Between April and July 2000, for example, the number of U.S. households with digital devices that can access the Internet without personal computers grew 12%.⁷⁷ And one industry forecast estimates that by 2002, wireless data subscribers in the U.S. will outnumber wire line data subscribers.⁷⁸ As noted earlier, we are and will be seeing a tremendous number of new sources for Web and broadband access: televisions and other home appliances, the dashboards of cars, wristwatches, and perhaps even the fibers of our clothes.

What exactly are the accessibility issues with which industry needs to be concerned? Generally, all relevant entities must consider how to make their products, networks, and services accessible to people with disabilities as they are designing

and developing the next generation of technologies. In some cases, this might mean implementing guidelines that already have been developed. The WAI, for example, has guidelines in place for content providers regarding font sizes, color schemes, image placement and background patterns that will promote accessibility for people with low vision.⁷⁹ The guidelines also stress the importance of using alternative text descriptions—or “ALT” tags—which allow people with sight disabilities to use screen reading software to access images.⁸⁰

In other cases, this will mean ensuring that the access solutions of this generation can be successfully carried over to the next generation of technologies. For example, it will be an important priority for video delivered over broadband networks to provide for closed captions and video description.⁸¹ WGBH Educational Foundation (“WGBH”) notes in comments to the FCC that none of today’s major Web-based programming has closed captioning even though Web-based programming will rapidly continue to grow.⁸² By 2006, it predicts, “the delivery of video over the Internet will become so commonplace . . . that certain Web-based media channels will actually register on the Nielsen charts and score higher ratings than some cable channels.”⁸³ WGBH also notes that already thoughtlessly designed compression schemes and other problems are in some instances preventing the closed-captioning data and video-description audio from TV signals to pass through satellite systems, cable systems, digital video disks (“DVDs”) and personal digital video recorders.⁸⁴

with proprietary enhanced communications protocols, which allow the TTYs to operate more quickly and to interrupt, has grown rapidly. Unfortunately, the new solutions that industry is implementing do not appear to work with the TTYs using the proprietary protocols. See *Fourth E-911 TTY Order*, 15 FCC Rcd. at 25,216, 25,222–23, paras. 2, 20–23.

⁷⁶ *Standards bodies struggle to stay current*, ELECTRONIC NEWS, July 31, 2000, at 2.

⁷⁷ *Non-PC Net Device Usage Grows in U.S.*, INTERNETNEWS, at http://www.internetnews.com/bus-news/article/0,,3_124542_Ext,00.html (Sept. 20, 2000).

⁷⁸ *In re Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*; Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, *Fifth Report*, 15 FCC Rcd. 17,660, 17,693–94.

⁷⁹ See Jamal Le Blanc, *Access and Accessibility*, THE DIGITAL BEAT, Mar. 2000, at 2, available at <http://www.benton.org/DigitalBeat/db031000.html>.

⁸⁰ *Id.*

⁸¹ See Comments of WGBH Educational Foundation, Media Access Division, *In re Inquiry Concerning Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps To Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, Notice of Inquiry*, 15 FCC Rcd. 16,641, at 2 (Mar. 20, 2000) [hereinafter *WGBH Section 706 Comments*]. The FCC’s closed-captioning mandates apply only to cable and TV providers, and the TV Decoder Circuitry Act of 1990 applies to television receivers that are 13 inches or more but to no other devices. The Commission’s video description regulations, adopted in July 2000, apply to broadcasters, cable operators and satellite providers, but not to ISPs. *Id.* at 2–3; see also *In re Implementation of Video Description of Video Programming, Report and Order*, 15 FCC Rcd. 15,230, 15,238–44, paras. 19–30 (2000).

⁸² *WGBH Section 706 Comments*, *supra* note 81, at 2–3.

⁸³ *Id.* at 2.

⁸⁴ *Id.* at 4.

Industry also must ensure that new technologies do not pose barriers to people with disabilities. For example, we know already that people who are blind and have sight disabilities cannot use the touch screens on wireless hand held devices. Soft buttons on these devices also are not usable because their functions change as the user moves through the on-screen menu.⁸⁵ We also know that broadband services will have to be constructed so that they can activate a visual or vibrating signal so that people who are deaf will know when someone is trying to call them, just as flashing ring indicators are used on phones to alert people who cannot hear that a call is coming in.⁸⁶

These, of course, are just a few examples of the kinds of issues that industry must address if it is to make the next generation of technologies accessible to people with disabilities. Many new challenges will arise that cannot be anticipated right now. Given the complex issues and number of entities involved, industry, working with consumers and government, is in the best position to determine how to achieve these goals. It will not be easy for industry to devise a process, which on one hand, will be fast and flexible enough to address new challenges as they arise, and on the other hand, include all the stakeholders necessary to fashion the most effective solution. As daunting as this task may seem, it must be done and done now while advanced services are still in the earliest stages of deployment.

C. Ensuring That Products Are Actually Usable

Technology has the potential to transform the lives of those living in underserved communities, of school children and of people with disabilities. But it is not enough to merely have the infrastructure in place. Nor is it enough to make the networks of tomorrow technically accessible. The technology actually has to be usable by all Ameri-

cans who want to use it, and industry will have to concern itself with this issue.

What exactly does “usable” mean? Certainly “usable” includes the concept that was developed in the disabilities access context. Section 255 requires that telecommunications service providers and manufacturers of telecommunications equipment make their products “accessible to and usable by” people with disabilities, if readily achievable.⁸⁷ In its discussion of the meaning of “usable,” the Commission stated that “‘usable by’ generally refers to the ability of people with disabilities to learn about and operate . . . [product] . . . features effectively.”⁸⁸ Thus, the Commission regulations, as well as the Access Board guidelines⁸⁹ on which they were based, provide that people with disabilities have access to product information (including information on accessible features), operating instructions and technical support that is functionally equivalent to that provided to people without disabilities.⁹⁰

No doubt, the technologies of tomorrow will have to be usable in this sense. As WGBH points out in comments to the Section 706 proceeding, those developing video programming delivered over broadband will have to determine how to make programming guides in accessible formats.⁹¹ But ensuring that the broadband technologies of tomorrow are usable will present broader challenges, both in the sense that many different communities will have needs that will have to be addressed, and that tomorrow’s technologies will be inherently more complex than telephony.

We already know some of the challenges. For example, only 23% of teachers feel well prepared while only 10% feel very well prepared to use the computers and the Internet in their teaching.⁹² Other Americans who could benefit the most from being connected simply do not have the technological literacy skills to use the Internet at all. As Andy Carvin of the Benton Foundation

⁸⁵ A phone, for example, may have two buttons below its screen that will be labeled “directory” and “re-dial” at the beginning of a call, but then will change to “backspace” and “okay” as soon as a call is initiated, and then to “transfer” and “hold” once the call is in progress. *See Trace/Gallaudet Section 255 Comments, supra* note 8, at 12–13.

⁸⁶ *See generally Trace/Gallaudet Section 255 Comments, supra* note 8, at 14.

⁸⁷ 47 U.S.C. § 255.

⁸⁸ *Section 255 Order, supra* note 38, at para. 23.

⁸⁹ *See generally Access Board, supra* note 69. The Access Board, is an independent federal agency devoted to accessi-

bility for people with disabilities. Under Section 255, the Access Board was given responsibility for promulgating accessibility guidelines for telecommunications equipment manufacturers. The FCC rules were identical to or based upon the Access Board guidelines, with a few minor exceptions. *Section 255 Order, supra* note 38, at para. 14.

⁹⁰ *Section 255 Order, supra* note 38, at para. 22.

⁹¹ *WGBH Section 706 Comments, supra* note 81, at 5.

⁹² NATIONAL CENTER FOR EDUCATION STATISTICS, *TEACHER USE OF COMPUTERS AND THE INTERNET IN PUBLIC SCHOOLS 2*, at <http://www.NCES.ed.gov> (Apr. 2000).

writes, "Am I going to know how to use Netscape in order to go on the Web? Do I have a clue how to use a search engine successfully? Can I use Microsoft Word to create that resume that I've been meaning to get done?"⁹³ And a recent study by the Children's Partnership has found "that it is as important to create useful content on the Internet—material and applications that serve the needs of millions of low-income and underserved Internet users—as it is to provide computer and Internet connections."⁹⁴ The study found a lack of meaningful content for underserved Americans,⁹⁵ including local information about their communities, such as information about employment, education and business development; information that is understandable for those with limited literacy skills; information in multiple languages; and content that is culturally appropriate.⁹⁶

But we do not know all of the challenges that users face. If we are going to ensure that the technologies of tomorrow—as well as the technologies of today—are actually used to their full potential by all communities, industry needs to work closely with these communities, understand their special needs and respond to them. As discussed in more detail below, there are many private and public-private initiatives that are providing some technology training. And clearly, there are some products on the market—and websites—that respond to some special needs. The new toll-free voice portals from Lycos, Tellme and others are useful to everyone because their voice recognition technologies allow people with sight and physical disabilities, and people without a computer, to access information from the Internet about traffic, weather, entertainment and other interests.⁹⁷ Entrepreneurs also are creating websites, such as Quepasa.com, NetNoir.com and BlackPlanet.com, that provide black and Hispanic-oriented online content.⁹⁸ And on the new Internet,

"e-learning" businesses are changing the education marketplace, according to a recent report by Peter Stokes that was commissioned by the Department of Education.⁹⁹ Classroom Connect, for example, offers classroom course content, technology training for teachers and virtual online explorations with such partners as the American Museum of Natural History, the Discovery Channel School and the New York Times Learning Network.¹⁰⁰

But much needs to be done if the broadband networks of tomorrow are truly going to be usable and meaningful to all Americans. And as important as the ongoing efforts are, so much more could be done if companies made a sustained, industrywide commitment to address the concerns of underserved communities. A broadly based industry consortia, for example, could maintain at least a minimal staff and could coordinate efforts that an individual company (particularly a smaller company) could not undertake.

The first thing that industry could do to make technologies more usable is to figure out how it can best reach and foster regular and ongoing dialogues with underserved communities. Whether it is through face-to-face meetings, e-mails or listserves, industry must get to know these communities and the problems that they are facing before it can address the problems. When the Access Board¹⁰¹ formed consumer-industry advisory boards to make recommendations with respect to the Section 255 and Section 508 rulemakings, it was the first time that so many in industry and the disability community had been brought together to discuss such a broad range of issues. There were disagreements, to be sure, but both representatives from the disability community and representatives from industry came away from the process with a much greater understanding of the challenges that the others were facing in trying to achieve access. And there are continuing commu-

⁹³ Andy Carvin, *Beyond Access: Understanding the Digital Divide*, BENTON FOUNDATION, 3, at <http://www.benton.org/Divide/thirdact/speech.html> (May 19, 2000).

⁹⁴ The Children's Partnership, *Online Content For Low-Income and Underserved Americans: The Digital Divide's New Frontier*, at <http://www.childrenspartnership.org> (Mar. 2000).

⁹⁵ Underserved Americans, for purposes of the study cited, include those who have low incomes, live in rural communities, have a limited education, and are members of racial or ethnic minorities. *Id.*

⁹⁶ *Id.*

⁹⁷ See, e.g., John Borland, *Tellme Web-over-phone service goes national*, CNET NEWS.COM, at <http://news.cnet.com/news/0-1004-200-2330870.html> (July 24, 2000).

⁹⁸ Eric Rhodes, *Bridging the Digital Divide*, 4, at <http://www.ideas2000.org/Issues/Education/DigitalDivide.pdf> (July 2000) [hereinafter Rhodes].

⁹⁹ See Peter Stokes, *E-Learning: Education Businesses Transform Schooling*, EDUVENTURES.COM at http://www.Eduventures.com/pdf/doe_elearning.pdf (June 2000).

¹⁰⁰ *Id.* at 7.

¹⁰¹ See generally Access Board, *supra* note 69; see also *Section 255 Order*, *supra* note 38, at 13–14.

nications between the disability community and some industry segments. The Voice Over Net ("VON") coalition, for example, sponsored a full-day outreach session at the FCC in December 1999 to work toward a better understanding of the disability community's concerns over the accessibility of Internet telephony. Industry needs to undertake a broader and ongoing effort to learn about what is going on in underserved communities, and how technology can be relevant to them. What is the inside of a classroom like today? What difficulties will Indian communities face as they leap from having no phone service to having broadband? How can we make it easier for someone with low literacy skills to effectively navigate through the content on the Web? How should we design a communications product for a person who is deaf but who can speak?¹⁰²

Industry also can organize a virtual clearinghouse (accessible also by a toll-free number) with information about communications technologies. The information should be regularly updated, with links to companies for more specific information. This would allow, for example, people with disabilities to make industrywide inquiries about the availability of certain accessibility features on certain products.¹⁰³ It also would allow educators and community leaders to find niche products that would best serve their needs. An industry forum also could post and disseminate "lessons learned" from its outreach activities and, as appropriate, discuss the "usability" solution it developed.

Industry also can provide technology training for schools, community centers, employers interested in hiring people with disabilities and other

entities. Of course, a number of private initiatives and public-private partnerships are already underway, which, for example, provide online mentoring and technical support to underserved communities. Last September, the Commission hosted a four-day telecommunications seminar for tribal leaders, in which over fifty experts from U.S. government agencies, tribal communities, the private sector, and foundations provided technical, financial and regulatory information about the telecommunications industry.¹⁰⁴ PowerUp, a national initiative supported by nonprofit organizations, major corporations and federal agencies, currently has four pilot projects (and a great number more planned) that focus on teaching technological skills to youth.¹⁰⁵ The CEO Forum on Education and Technology, consisting of twenty-four CEOs and other high-level representatives from high-tech companies and the education community, has developed reports and other materials to help teachers use technology effectively in the classroom.¹⁰⁶ The Department of Education also sponsored the Secretary's Conference on Educational Technology: Measuring the Impacts and Shaping the Future, in which Secretary Richard Riley brought together high-tech companies, educators, nonprofits and consultants to examine issues relating to the effective use of technology in the schools.¹⁰⁷ Additionally, last year, the Department of Education spent \$75 million on grants to ensure that new teachers can successfully integrate technology into their curricula.¹⁰⁸ The Century Foundation has recommended that the federal government initiate a much larger scale technology training program (to be capped at \$1.75 billion over four years) for "at risk" young

¹⁰² See *Section 255 Order*, *supra* note 38, at 17. The Forum outreach activities will be an important source of information in order to ensure that the next generation of products is technically accessible.

¹⁰³ See generally CELLULAR TELECOMMUNICATIONS AND INTERNET ASSOCIATION, CTIA'S WORLD OF WIRELESS COMMUNICATION, at <http://www.wow-com.com/consumer/access/guide/index.cfm> (last visited Mar. 22, 2001). CTIA provides some general information for consumers about disabilities access and a list of companies (with links to their Web pages) that have products that may be useful for people with certain disabilities. What is contemplated here, however, is a clearinghouse in which consumers could easily link to specific products that contain the accessibility features that they need.

¹⁰⁴ In June 2001, the Commission held a follow-up conference in St. Paul, Minn., for business leaders in telecommunications and utilities to learn from Native American experts

how to successfully develop business ventures in Indian territory. See generally FEDERAL COMMUNICATIONS COMMISSION, INDIAN TELECOM TRAINING INITIATIVE, at <http://www.fcc.gov/indians/> (last visited Mar. 22, 2001) (describing upcoming Indian Telecom Training Initiative Conference to be held on Sept. 23-26, 2001, in Las Vegas, Nevada).

¹⁰⁵ See generally PowerUp, at <http://www.PowerUp.org> (last visited Mar. 22, 2001).

¹⁰⁶ See generally CEO Forum, at <http://www.ceoforum.org> (last visited May 13, 2001).

¹⁰⁷ The conference was held last September. DEPARTMENT OF EDUCATION, SECRETARY'S CONFERENCE ON EDUCATIONAL TECHNOLOGY, at <http://www.ed.gov/Technology/techconf/2000/> (last visited Mar. 22, 2001).

¹⁰⁸ Press Release, The White House, The Clinton-Gore Administration: From Digital Divide to Digital Opportunity, at <http://www.digitaldivide.gov/2000-02-02.html> (Feb. 2, 2000).

people and teachers.¹⁰⁹

It is beyond the scope of this paper to attempt to make a recommendation about the appropriate mix of private and public funds and efforts necessary to ensure that teachers, students and others have the training they need to take full advantage of today's and tomorrow's technologies. But it is likely that providing technology training will continue to be an effort undertaken by the private, nonprofit and public sectors. And when two-thirds of all teachers feel they are not well prepared to use technology effectively in the classroom, it is clear that much remains to be done. An industry forum could play a critical role in coordinating a broadly based technology training initiative.

A forum also could conduct an accessibility awareness campaign targeted at those in industry who are outside of the communications/high-tech sectors (and thus not in the forum) but whose actions affect the accessibility of communications products. For example, a forum could work with retailers like Wal-Mart to ensure that their employees understand the accessible features on the communications products they sell. It also could educate employers about how technology can enable people with disabilities to do their jobs.¹¹⁰ An industry forum could stress to organizations, such as banks and catalog companies, the benefits of configuring their phone systems so that interactive voice response services are accessible to people with disabilities.¹¹¹ Finally, the forum could strive to get as many companies as possible to make their Web pages accessible.

The activities recommended here—reaching out to underserved communities, providing an industrywide clearinghouse, coordinating technology training and launching an accessibility aware-

ness campaign—could go a long way to addressing the usability concerns with today's technologies. And by focusing on these issues now, industry can prevent the recurrence of the same problems in tomorrow's technologies. By better understanding the concerns of underserved communities, industry will make products that are more usable and meaningful for everybody.

D. Making a Recommendation About Future Universal Service Policies

An industry forum can do more than solve technical problems and undertake outreach, training and education initiatives. It also should engage in one of the most important communications policy issues in the coming years: how to provide for universal service to the next generation of technologies. Because tomorrow's universal service policies are bound to implicate a much broader scope of services than they do today, it is important that all service providers—not just those that traditionally have been regulated—participate in formulating policy recommendations.

Of course at this stage of deployment of advanced services, it is too early to predict what services will be considered so critical that they must be universally affordable.¹¹² Some technologies, which seem so promising when they are first introduced, will never be accepted by a critical mass of consumers, as was the case with the betamax home video technology. Other technologies, like the television, will achieve almost 100% penetration without any special intervention. Still other technologies, such as compact disc players, will not be deemed critical enough to ensure that they are universally affordable. Nevertheless, we do

¹⁰⁹ Rhodes, *supra* note 98, at 6.

¹¹⁰ Industry already has undertaken some important initiatives in this area. For example, in Oct. 2000, CEOs of major corporations, including high-tech industries, submitted a letter to President Clinton pledging to take concrete actions to help boost the employment of people with disabilities. Letter from CEOs to President Clinton, at <http://groups.yahoo.com/group/dd-confcall/messages/432> (Oct. 25, 2000).

¹¹¹ See *Section 255 Order*, *supra* note 38, at paras. 101–02. The *Section 255 Order* states that:

The access barriers created by inaccessible and/or unusable voicemail and interactive menus has made it extremely difficult for people with hearing, vision, or physical disabilities either to reach the party to whom they have placed the call or to obtain the information they seek in their phone call . . . For example, the

voicemail or menu may not allow adequate time for a caller using the Telecommunications Relay Service to have the information from the automated device relayed to the caller's TTY and a response from the caller relayed back to the device through the Communications Assistant . . . The time allowed for a person to input the necessary numbers . . . to select an option from a list of choices or control the other functions may be too short for people with motor, [learning, or hearing] disabilities or people who are blind.

Id.

¹¹² According to the *Second Advanced Services Report*, for example, 1.6% of U.S. households subscribed to advanced- and high-speed services at the end of 1999. *Second Advanced Services Report*, 15 FCC Rcd. at 20,942, para. 70.

know enough to predict that some form of broadband technology will play an increasingly important role in our lives and that we will be working to ensure that these technologies are universally affordable.

We have good reason to believe, however, that the market will be able to ensure that critical technologies will be widely affordable. As discussed earlier, pro-competitive, deregulatory, and unregulatory policies have spurred technological innovation and lowered prices, making new technologies more affordable for everyone.¹¹³ In particular, technological innovations in satellite, wireless and other technologies, for example, may make advanced services more affordable in rural and isolated areas.¹¹⁴

Government—and industry and government together—also can take actions that will allow the market to provide for universal service to the fullest extent possible. In last year's report on the deployment of advanced services, for example, the Commission identified several actions that it had

¹¹³ TOWARD DIGITAL INCLUSION, *supra* note 23, at xv, 2.

¹¹⁴ *Second Advanced Services Report*, 15 FCC Rcd. at 20,932, 20,937, paras. 42, 56.

¹¹⁵ Some of these actions include: strengthening its collocation rules; encouraging the resale and unbundling of advanced services; encouraging the competitive delivery of DSL services through line-sharing; establishing criteria for waiving LATA boundaries where they create a barrier; ensuring that competing providers receive nondiscriminatory access to facilities and services; encouraging the deployment of wire line and wireless service to tribal areas; and promoting wireless high-speed service. See *Second Advanced Services Report*, 15 FCC Rcd. at 21,004–08, paras. 249–66.

¹¹⁶ Some of these actions include: modifying its collocation rules to provide for competitive access to incumbent LECs' remote terminals; streamlining the equipment approval process for customer premises equipment with advanced telecommunications capability; considering whether to allow access by multiple ISPs to the cable companies' infrastructure for the delivery of advanced services; and examining ways to make more licensed and unlicensed spectrum available for broadband services, as well policies to increase spectrum flexibility and efficiency. *Second Advanced Services Report*, 15 FCC Rcd. at 21,008–12, para. 267.

¹¹⁷ Existing programs that play such a role include: the Department of Commerce's Technology Opportunities Program, which in FY 2000 has provided \$12.5 million in matching grants to public and nonprofit sector entities for model projects demonstrating innovative uses of network technology; the Department of Agriculture's Rural Utilities Service, which has been in existence for 50 years and has provided over \$1.4 billion in loans over the last three years for infrastructure investment for companies that provide local exchange telecommunications services to rural areas; and the Department of Education's Community Technology Centers program, which for FY 2000 is awarding \$32.5 million in grants to state and local education agencies to provide com-

puter and Internet access and training for working class families. See NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION AND RURAL UTILITIES SERVICE, ADVANCED TELECOMMUNICATIONS IN RURAL AMERICA: THE CHALLENGE OF BRINGING BROADBAND SERVICE TO ALL AMERICANS 35–39, at <http://www.ntia.doc.gov/reports/ruralbb42600.pdf> (Apr. 2000). In addition, in FY 2000, the Department of Education's National Institute of Disability Rehabilitation and Research ("NIDRR") provided \$86.5 million to fund research relating to making new technologies accessible to people with disabilities. The Assistive Technology Act of 1998 also provided \$34 million in FY 2000 to support state efforts such as training, technical assistance and alternative loan programs relating to technologies for people with disabilities. See *The White House, Clinton-Gore Administration Accomplishments in Creating Digital Opportunity for People with Disabilities*, at <http://ofcn.org/cyber.serv/tledem/pb/2000/sep/msg00178.html> (Sept. 21, 2000) [hereinafter *Clinton-Gore Accomplishments in Creating Digital Opportunity*].

It seems likely that the market, for the most part, particularly in conjunction with government grants and other incentives, will be able to provide timely and affordable access to the critical technologies of tomorrow. On the other hand, it also seems quite likely that some segments of our population will not have timely and affordable access to the critical services of tomorrow, unless additional action is taken. Indeed, the Commission

¹¹⁸ The government uses its purchasing power in implementing Section 508, for example, by requiring that any electronic or information product that it buys are accessible to people with disabilities, unless doing so would create an undue burden. See *Clinton-Gore Accomplishments in Creating Digital Opportunity*, *supra* note 117.

¹¹⁹ Among other things, the Federal-State Joint Conference has identified best practices that have led to increased access to advanced services. Some of the best practices it identified include: "demand aggregation," a deployment technique in which groups of customers band together to attract investment for the construction of new facilities; and "anchor tenancy," a strategy in which a public entity or other large customer attracts investment in broadband facilities, which can then be used by other businesses or residential customers. *Second Advanced Services Report*, 15 FCC Rcd. at 20,980–81, paras. 177–80.

recently stated in its *Second Advanced Services Report* that:

[d]espite our conclusion that deployment is reasonable and timely overall, the data support the troubling conclusion that market forces alone may not guarantee that some categories of Americans will receive timely access to advanced telecommunications capability. We identify certain categories of Americans who are particularly vulnerable to not having access to advanced services. These include low-income consumers, those living in sparsely populated areas, minority consumers, Indians, persons with disabilities and those living in the U.S. territories.¹²⁰

In light of this conclusion, the Commission stated that, among other things, it will work closely with the states to consider whether changes can be made to the existing high-cost fund to support advanced telecommunications capability. In addition, it stated that it also would work with the states to consider whether a new universal service mechanism should be created.¹²¹

It is, of course, critical that industry engage in the discussion of how to ensure that all Americans have reasonable and timely access to the critical technologies of tomorrow. Some important industry efforts have already been launched. In February 2001, for example, the Consumer Energy Council of America's Universal Service Forum, consisting of participants from the telecommunications and information industries, federal and state government, and consumer groups made recommendations about how the universal service program should evolve.¹²²

It will be crucial for representatives of all service providers, including those who are not currently subjected to universal service obligations, to continue and build upon these efforts. As discussed previously, the distinctions between "information" service providers and "telecommunications" service providers (as well as other service providers)

are blurring and quickly disappearing, and over the long run it will be important that all service providers are treated with regulatory parity. In developing recommendations for future universal service policies, industry should consider a range of forward-looking, market-based, technology-neutral mechanisms that perhaps are not provided for under current laws or regulations.

For example, it may well be that the most efficient and effective way to provide new services to low-income people and institutions will be different than the most efficient and effective way to provide new services to high-cost areas. Where there is competition and a fully functioning market, the most efficient policy could well be for government to administer flexible, sliding scale vouchers for low-income and public institutions. These subsidies would be paid for with general taxpayer dollars, perhaps even funds raised in spectrum auctions.¹²³

On the other hand, where the market is not functioning and failing to serve certain high-cost areas, the government could impose a collective obligation to serve in which all relevant service providers would contribute proportionately (based, for example, on the number of subscribers or total revenue) to a subsidy fund. But it may be that industry could determine which provider or providers could carry out the obligation most efficiently and reimburse accordingly. Service providers could do this, for example, by running their own "negative auction," that is, awarding subsidy funds to the provider who could serve the "high-cost" area for the lowest bid.¹²⁴ Or perhaps, at least initially, industry would look to government to administer such an auction.¹²⁵

Industry, of course, will have its own ideas

¹²⁰ *Id.* at 20,918, para. 8.

¹²¹ *Id.* at 21,009, para. 267.

¹²² The recommendations were the result of six month consensus-building process. The recommendations included: (1) creating a technological task force to advise the Commission and the Federal-State Joint Board on supported services; (2) utilizing a deliberative approach for determining essential services; (3) coordinating the national development of advanced services through the USF; (4) using model states as benchmarks for low-income policies; (5) creating a compendium of successful outreach tools to publicize the low-income program; and (6) streamlining the Eligible Telecommunications Carrier certification procedures. See CECA UNIVERSAL SERVICE REPORT, *supra* note 9, at 51-53.

¹²³ Former FCC Chairman Reed Hundt and others originally proposed that the revenues raised from spectrum auc-

tions be used to connect classrooms to the Internet. REED E. HUNDT, YOU SAY YOU WANT A REVOLUTION: A STORY OF INFORMATION AGE POLITICS 76, 94 (2000).

¹²⁴ The Commission considered using the "negative auctions" to administer the current high-cost fund. It found that although "competitive bidding . . . comports with the intent of the 1996 Act to rely on market forces and to minimize regulation," it did not have an adequate record to adopt a competitive bidding mechanism at that time. *In re* Federal-State Joint Board on Universal Service, *Report and Order*, 12 FCC Rcd. 8776, 8947-51, para. 325 (1997).

¹²⁵ Industry also may want to consider the most effective way to address other high-cost problems that are not currently categorized as universal service programs. What is the best way, for example, to ensure that the relay systems that allow people who are deaf to have access to the nation's com-

about universal service policies for the future. It will have thoughts about what services should be subsidized, who should be subsidized and how they should be subsidized. It will have recommendations about whether or to what extent the administration of universal service funds should be privatized. And it will have opinions about how to transition from the current universal system to the future one. Such a consensus recommendation from a broadly based industry consortia, which would include both those who have and those who have not been subjected to universal service obligations in the past, could carry great weight with both the Congress and the Commission. Industry's challenge and opportunity is to work with government and consumers to fashion a policy that will serve us well in the age of convergence and deregulation.

III. CONCLUSION

"Even if you're on the right track, you'll get run over if you just sit there."¹²⁶

We are truly at the threshold of a new era. It is a time where technological change and regulatory upheaval demand both freedom and responsibility.

Industry, consumers and regulators must contend with difficult transition issues as they cross into the new age. This article sets forth a vision of the role industry must play in this age without addressing the more immediate issues of what to do

munications networks include new technologies? What is the most efficient and effective way to ensure that people with disabilities have access to the next generation of specialized equipment? Currently about 25 states provide specialized customer premises equipment—such as TTYs, telebrailles and visual ringing devices—to people with disabilities at little or no cost. For more information, *see generally* Telecommuni-

with the regulatory underbrush that is currently in place. But industry cannot afford to wait until we figure out all of today's federal, state and local regulatory quandaries—whether it be reforming access charges or providing open access to broadband cable facilities or expanding the coverage of current disability access provisions—before it takes action to meet the access needs of tomorrow.

Soon, decisions will be made about how much responsibility industry can actually assume. Will it really be possible to accomplish the access goals of tomorrow without any regulation? Industry may be in the best position to figure out how to solve access problems, but will regulation be needed to identify and prioritize the problems to be solved, and to set an implementation deadline? And will regulation be needed to ensure that all companies adhere to the deadline? Companies may agree upon a universal service mechanism for the next generation of critical services, but will government need to identify which services are critical? Will government need to administer the system? The answers depend on the choices that industry makes.

Technology is changing. Government is changing. Consumers are changing. Some in industry are changing. But *all* industry must change. Like the customers in *The Cluetrain Manifesto*, "We are watching. But we are not waiting."¹²⁷ Our expectations are high, but the stakes are even higher. It is time for industry to get on board.

cations Equipment Distribution Program Association, at <http://www.tedpa.org> (last visited June 12, 2001).

¹²⁶ *See generally* Famous Quotations, at <http://www.famous-quotations.com> (last visited Mar. 27, 2001) (quoting Will Rogers).

¹²⁷ LEVINE, *supra* note 47, at xviii.