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December 2, 2009

**VIA ELECTRONIC FILING**

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street SW  
Washington, DC 20554

**Re: Written *Ex Parte* Communication, NBP Public Notice #4 — Broadband Accessibility for People with Disabilities Workshop II, GN Docket Nos. 09-47, 09-51, 09-137**

Dear Ms. Dortch:

Pursuant to Section 1.1206 of the Commission's rules,<sup>1</sup> Microsoft Corporation ("Microsoft") submits this letter further addressing several issues raised in Microsoft's November 19, 2009, *ex parte* meeting with Commission staff.<sup>2</sup>

For more than two decades, Microsoft has worked together with representatives of the disability community, nongovernmental organizations, industry leaders, and governments to create a vibrant and healthy accessible technology ecosystem that thrives on the dual principles of interoperability and industry best practices. As the Commission works over the next three months to finalize the National Broadband Plan, Microsoft urges the Commission to acknowledge and support the positive forces that these principles have exerted over the development of the existing accessible technology marketplace. These positive forces include: industry leadership and development of interoperable standards to provide accessibility solutions, cooperation between industry players to develop solutions for products that include multiple components (such as hardware and software, and software and services), voluntary disclosure of accessibility features to users, and overall, market-driven solutions to accessibility challenges. The Commission also should take steps to ensure that these efforts are not hindered by well-intended but ultimately unworkable proposals that seek to reinvent the existing

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<sup>1</sup> See 47 C.F.R. § 1.1206.

<sup>2</sup> See Microsoft Corporation, *Notice of Ex Parte Communication*, GN Docket Nos. 09-47, 09-51, 09-137 (Nov. 20, 2009).

framework in favor of approaches that will abandon and diminish rather than enhance the market for accessibility solutions.

The market for accessible technologies is expected to expand rapidly over the next decade, and market-driven models will become increasingly important to ensure that the industry is able to meet the growing technology needs of people with disabilities. Microsoft agrees with the Commission that challenges to achieving this vision remain. But at the same time, Microsoft believes that the technology industry is well positioned to work collaboratively with other stakeholders, including the Commission, to develop innovative solutions to these challenges. By coordinating with industry leaders, assistive technology vendors, nonprofits, and consumers, the Commission can provide recommendations in the National Broadband Plan that will have the effect of promoting increased investment in assistive and accessible technologies so that all Americans, including the millions with disabilities, can play a meaningful role in the nation's broadband future.

### **1. The Existing Accessibility Ecosystem Facilitates Many Customized and Effective Solutions for Consumers.**

At Microsoft, accessibility is integrated into every stage of the product development lifecycle. The Accessibility Development Lifecycle guides Microsoft's various product groups through product planning, design, development, and testing. Moreover, internally developed guidance referred to as "Microsoft Accessible Technology Standards" helps product groups at Microsoft incorporate accessibility requirements — which are informed by a variety of national and international standards, policies and procurement requirements — into their products and services.

As a result, many Microsoft products and services feature built-in accessibility and personalization options. For example, Microsoft's most recently-released operating system, Windows 7, includes improved built-in accessibility features such as screen magnification, speech recognition, an on-screen keyboard with text prediction, hover and scan modes, and multi-touch and pen input tools. More specifically, the "Ease of Access Center" control panel in Windows 7 allows users to explore and manage accessibility options for their computer display, mouse, keyboard, speech, and sound. A user with limited dexterity, for example, can turn on Speech Recognition, which allows the user to command his or her device verbally, dictate an e-mail, and surf the Web by voice instead of with a keyboard and mouse. The Ease of Access system also has an optional self-assessment that produces user setting recommendations; these user settings are preserved and applied each time the user logs on his or her Windows personal computer. Similarly, Microsoft's Internet Explorer 8 Web browser product provides users with additional flexibility to personalize the browser experience to best suit their needs and preferences, including improved zoom and keyboard navigation and support for screen reading. The Zoom feature in Internet Explorer, for instance, allows users to enlarge everything on a webpage, including images and text.

Microsoft's accessibility efforts extend well beyond its own products and services. Microsoft also offers products and services that make it easy for others to create accessible online content. Microsoft Web Expression 2.0, for example, helps developers build accessible websites by integrating design features that meet the U.S. Access Board's Section 508

standards<sup>3</sup> and the industry's Web Content Accessibility Guidelines.<sup>4</sup> Similarly, Microsoft Silverlight, which is an Internet browser plug-in for the delivery of online video and applications, enables Web developers to create accessible Internet video and applications by, for example, enabling closed-caption support of high-definition streaming media.

Third-party assistive technology vendors represent yet another critical component of the existing accessibility ecosystem. These include makers of devices and software. In many cases consumers seek highly-specialized assistive technologies to supplement out-of-the-box accessibility features so that their online computing experience can be customized further to fit their unique accessibility needs. For example, a consumer with limited dexterity may rely on the Speech Recognition feature in Microsoft's Windows 7 to dictate e-mails, but nevertheless may prefer to use a highly-specialized keyboard developed by a third-party vendor when surfing the web.

Microsoft works closely with third-party assistive technology vendors to ensure that its Windows operating system is compatible with a wide range of assistive technology products — such as screen readers, magnifiers, and specialty hardware — developed by others. To do this, Microsoft shares its accessibility Application Programming Interfaces (“APIs”) and other information with third-party developers of accessibility solutions so that their products and services can interoperate with Microsoft Windows and other products.

Microsoft also makes available to third-party developers its “Microsoft Accessibility Developer Center,” which provides guidance, essential information, tools, and technologies to develop accessible applications and write accessible code.<sup>5</sup> And Microsoft has donated the accessibility framework for its products and services, which it refers to as “UI Automation,” to the Accessibility Interoperability Alliance (AIA), a new international engineering organization dedicated to making it easier for developers to create software, hardware, and Web-based products that are accessible to people with disabilities. As a result of these efforts, hundreds of unique consumer accessibility offerings that are interoperable with Microsoft's products and services already are available — and in use — in the marketplace today.

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<sup>3</sup> See Rehabilitation Act of 1973, Pub. L. No. 93-112, 87 Stat. 355 (1973), as amended by the Rehabilitation Act Amendments of 1986, Pub. L. No. 99-506, § 603(a), 100 Stat. 1807, 1830 (codified at 29 U.S.C. § 794d).

<sup>4</sup> The guidelines were developed by the Web Accessibility Initiative (WAI), which works with organizations around the world to develop strategies, guidelines, and resources to help make the Web accessible to people with disabilities. See <http://www.w3.org/TR/WCAG10/>.

<sup>5</sup> See <http://msdn.microsoft.com/en-us/windows/bb735024.aspx>.

## **2. The Accessibility Ecosystem Thrives on Interoperability, Appropriately Established through Industry Standards and Best Practices.**

Interoperability means that different components of the accessibility ecosystem — including operating systems and applications, software, and services — are able to communicate and exchange data in an accurate, effective, and consistent manner. By encouraging technology innovation across platforms and devices, interoperability between products, software and services creates the broadest possible ecosystem of solutions for people with disabilities and drives down the cost and complexity of building accessible mainstream products.

The goal of interoperability is best advanced through industry standards and best practices that are designed to ensure that assistive technologies work within the broader accessibility ecosystem. In this regard, Microsoft routinely consults with the disability community, industry leaders, global standards bodies, academic institutions, and policy makers to develop interoperability standards and best practices.

For instance, Microsoft helped found the Accessibility Interoperability Alliance to collaboratively design solutions for long-standing interoperability issues and is on the Board of the Assistive Technology Industry Association, which establishes best practices to help ensure that the best products and services are delivered to people with disabilities. Microsoft also helped form the Internet Captioning Forum (“Forum”) to overcome the challenge of delivering captions with online video. The Society of Motion Picture and Television Engineers (“SMPTE”) agreed to carry on the work of the Forum and to develop an industry standard to ensure interoperability from content creation to end user consumption. Microsoft, which has participated in SMPTE’s standards program since 2003, also is active in the ad hoc group formed to take on this project, and the first standards are expected to be published in 2010.

There are many ways in which the information and telecommunications industries can achieve the Commission’s goal of ensuring greater accessibility through technology. The Commission should encourage industry development of accessibility standards that facilitate interoperability and should refrain from expressing preferences for particular technologies or for how interoperability should be achieved. Today’s customers increasingly operate in mixed source IT environments using products from a variety of vendors. In these heterogeneous IT environments it is common to see commercial proprietary software, commercial open source software, and community-based open source software working side-by-side.

The appropriate role for policymakers is *not* to prescribe which technology should be introduced by market actors, to determine which software development business model industry players should design and deploy, or to predict which solutions will gain favor among disabled users. Rather, policymakers should set realistic and meaningful goals for increasing the accessibility of information provided through technologies and allow industry to develop products and services that are interoperable with one another. For example, the Commission might recognize and promote industry standards and proven best practices. By deferring to industry on the manner in which interoperability is achieved, the Commission will promote and maximize the level of investment made in the development of interoperable technologies.

### **3. Market-Driven Models Are Instrumental in Helping to Meet the Rapidly Growing Need for Accessibility Solutions.**

It is well understood that in order for technology companies to invest in and develop accessibility solutions, they must be confident that there is or will be a market for such solutions. Section 508 of the Rehabilitation Act is a good example of how the federal government has in the past effectively used the market to drive the adoption of voluntary best practices and the development of innovative, interoperable accessibility solutions. Section 508 does not impose accessibility requirements on technology companies, but instead requires that the federal government develop, procure, maintain, or use electronic and information technology that best meet certain accessibility standards.<sup>6</sup> By focusing on the government's use of technology and not dictating specific accessibility technology solutions, Section 508 spurs competition among suppliers to meet, and at times to exceed, accessibility standards across all markets. This is because the market for federal government services is large, and most companies, including Microsoft, do not develop separate products and services for the government and for consumer or enterprise markets. As a result, numerous companies develop and make available to consumers today a range of accessible and interoperable products and services that facilitate the use of broadband Internet access by persons with disabilities. This trend is expected to grow as other countries consider adopting government technology use policies similar to Section 508.

Microsoft's research into accessibility issues has helped define the technology industry's understanding of the need for innovative accessibility solutions. In 2003, Microsoft commissioned the first comprehensive study designed to measure the market for accessibility solutions in the United States. This study found that while approximately 35 million working-age adults have a severe visual, hearing, or dexterity disability, another 90 million working-age adults have similar disabilities, albeit in milder forms.<sup>7</sup> These surprising figures suggested that, contrary to common assumptions, the market for accessibility solutions already is significant, with nearly six out of every 10 adult computer users in a position to benefit from some sort of accessibility feature.<sup>8</sup>

There is no question that, given demographic trends and advances in technology, the market for accessibility and assistive technologies will only grow — and grow rapidly — over the coming decades, particularly as the Baby Boomer population in the U.S. ages, life expectancy increases, and the use of personal computers and similar technologies continues to proliferate. Americans over the age of 65, for example, are, as a segment, growing three times as

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<sup>6</sup> See 29 U.S.C. § 794d.

<sup>7</sup> See Forrester Research, Inc., *The Wide Range of Abilities and Its Impact on Computer Technology*, at 7 (2004), <http://download.microsoft.com/download/0/1/f/01f506eb-2d1e-42a6-bc7b-1f33d25fd40f/ResearchReport.pdf>.

<sup>8</sup> See Forrester Research, Inc., *Accessible Technology in Computing — Examining Awareness, Use, and Future Potential*, at 12 (2004), <http://download.microsoft.com/download/0/1/f/01f506eb-2d1e-42a6-bc7b-1f33d25fd40f/ResearchReport-Phase2.doc>.

fast as the general population, with the number of people over 65 expected to nearly double from 35 million in 2000 to 63.5 million by 2025.<sup>9</sup> Equally notable is that this growing population of Americans over the age of 65 will be the first to have had significant and sustained exposure to computer technology. There is every reason to believe that these Americans will continue to rely — and rely increasingly — on technology as they continue to age.

Because the growing need for accessibility solutions is so acute, companies increasingly will need to compete to provide a broad range of accessibility solutions that are designed to interoperate with existing technologies. This market-driven model is appropriate because it breeds advancements in assistive technologies, expands consumer choice for accessible products and services, and drives down costs for consumers. Government intervention should occur only where there are market failures that prevent the formation of a competitive market for accessible technologies. To the extent that additional investment is needed to allow Assistive Technology vendors to develop and make available highly-specialized assistive technologies, for example, Microsoft encourages the Commission to recommend that Congress provide targeted funding to these companies to support the development and delivery of such products.

#### **4. The National Broadband Plan Should Identify Accessibility Challenges and Also Propose Meaningful Solutions.**

While the existing accessibility ecosystem is vibrant and thriving, Microsoft agrees with the Commission that accessibility challenges remain. To address these challenges, all participants in the accessibility ecosystem, including the Commission, should work cooperatively to identify and build upon the ecosystem’s existing strengths so that it can become even more robust and continue to serve the needs of people with disabilities as new technologies emerge. To assist in these efforts, Microsoft has developed a comprehensive framework for formulating meaningful solutions to the ecosystem’s accessibility challenges. This framework is focused on eight key areas:

1. Technology & Tools — solutions that focus on building accessibility technologies into platforms, developer technologies, and authoring tools;
2. Engineering Process — solutions that promote integrating accessibility throughout the development lifecycle of a product or service;
3. Accessible Applications & Content — solutions that help existing Assistive Technology vendors and Information Communication Technologies (“ICT”) companies migrate to modern tools and APIs;

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<sup>9</sup> Laura B. Shrestha, Specialist in Demography, Domestic Social Policy Division, Congressional Research Service, *The Changing Demographic Profile of the United States*, at 14 (May 5, 2006), <http://www.fas.org/sgp/crs/misc/RL32701.pdf>.

4. Collaboration — solutions that focus on improving coordination between relevant stakeholders, such as assistive technology vendors, developers of information and computer technology, nonprofits, governments, NGOs, researchers, and the disability community;
5. Marketing & Distribution — solutions that focus on improving public awareness for and increasing availability of specific accessible technologies for businesses, rehabilitation professionals, and educators;
6. Education & Training — solutions that focus on improving awareness for the need to design accessible and assistive technologies by providing training for product developers and by integrating accessibility information into relevant university curricula for engineering students;
7. Customer Support — solutions that focus on making it easier and more efficient for consumers to learn about new accessible technologies, find answers to questions about these products, and receive training on the use of mainstream accessible technologies and more specialized assistive technologies; and
8. Funding & Incentives — solutions that help subsidize costs for consumers, support grants for research, development and technology transfer of new innovative assistive technologies, and assist with the migration of existing, proven assistive technologies to modern tools and APIs.

Microsoft understands that the Commission does not and should not exercise jurisdiction or have authority over each of these areas and that Congress, nonprofits, and industry leaders often will play the primary role in implementing accessibility solutions along the lines of this framework. Nevertheless, the Commission should keep in mind this framework when considering accessibility issues and proposing recommendations in the context of its National Broadband Plan. Below are a few examples of how the Commission should do this in practice:

- The National Broadband Plan Should Facilitate Existing Collaboration in the Development of Interoperability Standards and Industry Best Practices.

Meeting the technology needs of people with disabilities in a complex and constantly evolving ecosystem presents many challenges. New accessibility features and assistive technologies enter the marketplace every day. The wireless and wired communications infrastructure on which these technologies rely is rapidly evolving, and new devices, such as “smart” mobile phones and netbooks, are being introduced at an ever-increasing pace. As a nation, our understanding of the needs of people with disabilities is changing as well.

In order for the technology industry to operate effectively in this rapidly-changing environment, industry leaders have collaborated with the disability community, nonprofits, and assistive technology vendors to develop industry interoperability standards and best practices that are specifically designed to enable new technologies to adapt to evolving consumer needs. The Commission should encourage the continuation of these collaborative efforts in its National Broadband Plan and recognize that these interoperability practices present the fastest and most

feasible way of ensuring that industry will continue to develop innovative accessibility solutions for consumers.

As a corollary, Microsoft urges the Commission to not endorse well-intended but ultimately unworkable proposals that seek to redevelop accessibility solutions from scratch, are technology- or platform-specific, or assume a particular “state of technology” will prevail in the future. These proposals presume to choose market winners and development methodologies that would jettison the substantial investments made to date by businesses and consumers in the current accessibility ecosystem and fail to recognize the extensive expertise and diversity of solutions embodied in these solutions. The technology industry has worked hard over the last two decades to develop technology, tools, interoperability standards and best practices, and many assistive technologies already adhere to a baseline set of design requirements that can be adapted quickly to new technologies or other changes in the accessibility ecosystem. Likewise, a variety of web-based, open source, and free assistive technologies, including screen readers and speech recognition products, already are available in the market. Changing approaches now instead of leveraging the existing infrastructure would be an unnecessary and costly diversion, resulting in the abandonment of the substantial investments made by businesses, governments, and consumers in these products, and would not address the underlying challenges of technology transfer, support for the thousands of existing applications in the marketplace, or the high cost of supporting persons with disabilities.

Abandoning the current ecosystem with the hopes of creating a new one is a complex and resource intensive approach that would have adverse effects on the viability of a healthy assistive technology ecosystem and would be contrary to the public interest. It would create massive dislocations in the existing ecosystem of accessibility solutions by overlooking the thousands of built-in features, add-on products, and training programs that government, businesses and consumers rely on today to improve productivity and that ensure widespread access to and use of the Internet. The existing ecosystem accounts for the differing technology needs that arise across a diverse range of disabilities. It is naive to believe that recreating the ecosystem of assistive technology and ICT solutions will result in greater customer choice, innovation or lower cost. The existing approach of promoting and creating interoperability between the thousands of ICT products and hundreds of assistive technology products offers the best opportunity to provide access for people with disabilities in this dynamic and ever-changing landscape of technology products. Any proposed solution that attempts to replace the existing infrastructure or move the entire industry to a single set of technologies and tools underestimates the complexity of the situation – and likely misunderstands the underlying causes of cost, complexity and availability.

The most promising path to achieving broad-reaching accessibility is through interoperability and cross-discipline collaboration, and acceleration of the migration path for existing assistive technologies onto modern APIs and technologies. It is our recommendation that the Commission not support policy action that would abandon or diminish the value of the existing accessibility ecosystem but instead recognize that interoperability between systems and applications is the key to greater accessibility and the only pragmatic approach to making the world’s existing ICT solutions available to everyone, regardless of age or ability.

- The National Broadband Plan Should Increase Broad Awareness of Accessibility Issues.

Through its various activities, Microsoft has long demonstrated a consistent and ever-growing commitment to improving public awareness of accessibility solutions. Public awareness of these solutions is important because without it consumers may not realize the various tools that already exist to facilitate full and meaningful access to and use of the Internet.

For example, Microsoft has developed numerous guides for educators, businesses, people with disabilities, and aging computer users that provide information on resources for people with disabilities.<sup>10</sup> The Microsoft Accessibility Resource Centers (“MARC”) program is one of the company’s latest efforts to improve public awareness and empower people with disabilities.<sup>11</sup> As part of this program, Microsoft has partnered with two nonprofit organizations — the Alliance for Technology Access and the Association of Assistive Technology Act Programs — to open 41 centers throughout the U.S. that provide technology training and assistance for people with a variety of disabilities that affect computer use, such as low vision, hearing loss, and hand and wrist pain.

To increase awareness within Microsoft (and among visitors to its campus in Redmond, Washington), the company also opened an “Inclusive Innovation Showroom” in 2008 that uses real-world scenarios to illustrate how accessibility features in Microsoft products and services, as well as in assistive technology solutions developed by Microsoft partners, make it easier for people of all abilities — including those with vision, mobility, learning, and hearing impairments — to use computer technology at work or at home.

Even with these efforts, increasing public awareness of accessibility issues remains a significant challenge. Many Americans, including business leaders, educators, occupational therapists, personal assistants, and people with disabilities, remain unaware of all the innovative accessibility solutions that are readily available to help people with disabilities use technology to its full potential. Microsoft commends the Commission for seeking comments on a range of accessibility issues as part of its National Broadband Plan inquiry<sup>12</sup> and for convening

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<sup>10</sup> See, e.g., Microsoft Corporation, *Accessible Technology: A Guide for Educators*, [http://download.microsoft.com/download/0/7/3/073c1245-78c9-4790-ba41-73132204e43e/AccessibleTechnologyGuideforEducators\\_v2.doc](http://download.microsoft.com/download/0/7/3/073c1245-78c9-4790-ba41-73132204e43e/AccessibleTechnologyGuideforEducators_v2.doc); *Computing Guide for Boomers*, <http://www.microsoft.com/enable/aging/>; Microsoft Corporation, *Engineering Software for Accessibility* (Microsoft Press 2009), [http://download.microsoft.com/download/5/0/1/501FF941-E93D-423F-868B-C7BB2EC08C56/engineering\\_for\\_accessibility\\_eBook.pdf](http://download.microsoft.com/download/5/0/1/501FF941-E93D-423F-868B-C7BB2EC08C56/engineering_for_accessibility_eBook.pdf).

<sup>11</sup> See <http://www.microsoft.com/enable/centers/default.aspx>.

<sup>12</sup> A National Broadband Plan for Our Future, *Notice of Inquiry*, 24 FCC Rcd. 4342 (Apr. 8, 2009); Public Notice, “Comment Sought on Broadband Accessibility for People with Disabilities Workshop II: Barriers, Opportunities, and Policy Recommendations,” *NBP Public Notice #4*, DA 09-2080 (Sept. 18, 2009).

a series of public workshops to ensure that accessibility issues continue to be part of the national dialogue in connection with the deployment and use of broadband technology.

The National Broadband Plan that ultimately is adopted by the Commission can — and should — improve awareness of these issues by describing the disability access ecosystem and the unique way the disabled rely on that ecosystem to secure meaningful and widespread access to and use of the Internet. This exposure not only will improve the lives of people with disabilities, but also will help business leaders and policymakers obtain a better understanding of how accessible technologies can be integrated into the workplace to improve the effectiveness and productivity of all employees.

- The National Broadband Plan Should Recommend That Congress Provide Funding Incentives for Highly-Specialized Assistive Technologies.

While the market generally has been successful at incentivizing companies to develop innovative accessibility technologies for a wide range of disabilities, some assistive technology vendors who build highly-specialized products sometimes struggle to find business models that are financially sustainable. Accordingly, Microsoft urges the Commission to include in the National Broadband Plan a recommendation that Congress adopt incentives to help fund the delivery and use of highly-specialized, interoperable assistive technologies and to encourage the migration of existing assistive technologies to already commercially available, but not yet widely adopted, modern accessibility infrastructure and APIs.

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Microsoft appreciates the Commission’s leadership in connection with disability access issues and the opportunity to meet with Commission staff to discuss these issues. Microsoft encourages the Commission to adopt a National Broadband Plan that supports the technology industry’s collaborative efforts to develop a healthy and robust accessibility ecosystem and that affirms the importance of market-based models in ensuring that people with disabilities enjoy the same unfettered, meaningful access to the Internet as all other Americans.

Respectfully submitted,

/s/ Paula Boyd  
Paula Boyd  
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cc: Elizabeth Lyle  
Jamal Mazrui