

Accessible Technology: *New Directions, New Possibilities*

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Abstract



In the ever changing landscape of today's technology – with improvements in biometrics, broadband access, and WiFi-enabled PDAs – we all need to work together towards making technology accessible to individuals with

disabilities. This fact is never more evident than in developing countries, where accessibility is critical for people with disabilities, as well as the aging population, to participate in all aspects of a meaningful life.

But what does it truly mean for technology to be “accessible”?

There are of course physical accommodations such as Brail, TTY systems, ramps, and elevators that should be addressed. However, we rarely think to build “ramps” to the technology we use on a daily basis. This must change.

As the world begins to explore the issue of improving the accessibility of everything from websites and IT equipment to cell phones and copy machines -- a clear solution is emerging: what better group of people to lead this change than people with disabilities.

By placing people with disabilities into the role of improving the accessibility movement for all, we effectively allow this group of talented, yet underutilized, individuals to use their first hand knowledge of accessibility to change the world. Such a scenario allows people with disabilities the opportunity to join the workforce, and to shape the accessibility movement as it unfolds over the years ahead.

With new technology there are new possibilities – and appropriately people with disabilities are leading this change.

1. Introduction

While using a “head-pointer” to skillfully navigate keys on her computer, Rosemary Musachio types with confidence. Musachio, who has cerebral palsy and cannot speak or use her hands, finishes her sentence, which reads simply:

“TecAccess gave me my respect back; they gave me my life back.”

Musachio proudly works for the award-winning company, TecAccess, an international consultancy with a team of more than 60 associates, most of whom are people with disabilities.

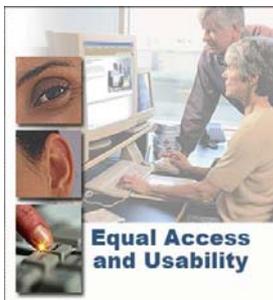
TecAccess is a success story that was once but a dream. As my daughter, Sara, who has Down syndrome, approached her teen years, I grew deeply discouraged and dismayed by the lack of employment options for Sara and others with disabilities in the United States, and around the world. I quickly decided to become part of the solution. Leaving my current job in IT, I created TecAccess, a company that is now known globally for its mission to hire people with disabilities and prove to the world that persons with disabilities can and should be an integral and vital part of the technology workforce. Today, TecAccess provides electronic and information technology (E & IT) accessibility solutions to clients in government, industry, and education.

2. Why Accessibility?

In the ever changing landscape of today's technology – with improvements in biometrics, broadband access, and WiFi-enabled PDAs – I realized that we all need to work together towards making technology accessible to individuals with disabilities. This fact is never more evident than in developing countries, where accessibility is critical for people with disabilities, as well as the aging population, to

participate in all aspects of a meaningful life. In creating TecAccess to accomplish this mission, I thought – what better person than someone who actually has a disability to lead and shape the accessibility movement as a whole. By applying their own unique and first hand experience of dealing with accessibility challenges on a daily basis, my thought was that there would be no better expert to improve accessible technology for the world – than someone with a disability.

3. How Does TecAccess Accomplish these Goals?



TecAccess has a total of 60 employees with disabilities that telecommute from around the world – including Japan, India, UK, and Australia. Many of the associates have disabilities that make it difficult for them to leave their homes, thus the telework model is perfect for their situation

and they receive above average pay band for their professional experience.

A recent flurry of legislation in the US, referred to as "Section 508," requires that all electronic and information technology that is developed, utilized, and purchased by the Federal Government is accessible by people with disabilities. This piece of legislation created binding, enforceable standards that are now incorporated into all Federal Procurement procedures that ensure all technology purchased and utilized by the government is accessible to persons with disabilities.

This is an abstract concept for many and it is often helpful to remind people of the challenges the accessibility movement faced in the 80s and 90s when making physical structures accessible to people with disabilities. During that period of time it was commonplace to build ramps to physical structures, well -- now we are required to build ramps to technology, both web and non-web based applications, as well.

Section 508 does not apply to the private sector or to agencies or establishments using federal funds. But because of the magnitude of federal purchasing power, it is believed that Section 508 will promote competition in the technology industry by clarifying the Federal market's requirement for accessibility in products intended for general use.

Adding to the need for accessible technology in the private sector, AOL, Target, Bank of America, Priceline, and many more have faced legal battles due to their alleged failure to provide an accessible web presence for individuals with disabilities.

Using the unique perspective of employees with disabilities to consult with government bodies and private industry, TecAccess directs clients on manners in which they can become more accessible. By providing E & IT accessibility consulting, TecAccess enables government agencies to meet their Section 508 and E/Gov requirements, help companies increase market share with accessible solutions, assist companies in expanding their customer base to reach people with disabilities, and provide expertise to help companies reach the increasing baby boomer population, who are used to using the computer, but will face failing vision and other disabilities.

TecAccess takes the compliance issue one-step further and also consults with agencies and organizations on ways to become ADA, Section 504 and 501 compliant, and also assists clients in making IT products, services, and websites useable. Other services included in this suite of accessibility expertise are accessibility sensitivity workshops and focus groups, policy and legal consulting, engineering and reengineering of services, and web accessibility training.

5. Why Accessibility?

On the last day of Sean Stapleford's junior year in high school he dove into the James River - and broke his neck. The year was 1972, and he was paralyzed from his shoulders down. Today, he lives in The Virginia Home, an adult residential-care facility in Richmond, Virginia, USA.

From his hospital room, Sean skillfully operates a "mouth stick" to navigate his computer screen, jumping from website to website while communicating with others using a host of assistive technology.

A computer monitor, suspended from an overhead swing arm, is mounted on his headboard, and an Environmental Control Unit (ECU) operates as a universal remote control - accessing his TV, VCR, stereo, phone, the nurse call bell, and his electric bed.

Sean is an expert. Despite limited use of his hands, he can press keys, turn pages and operate switches and speaker-phones with ease. This ability to navigate the world of technology has provided an opportunity to experience meaningful recreation, socialization and employment.

In recent years advancements in electronic and information technology have helped Sean become more involved and integrated in day-to-day living in Richmond - and across the world.

Working for TecAccess, Sean telecommutes each day from his room at the Virginia Home. Widely considered one of the best "accessibility testers" in the world, the tech-minded teleworker has the ability to communicate with other teleworking colleagues as far away as India and Japan with a quick flick of his mouth stick.

Sean is not only taking advantage of this recent move toward telecommuting in the business sector but also a general push in government and private industry to make technology more accessible to disabled computer users and the elderly.

While Section 508 may be helping spur this movement- it's Sean Stapleford and his coworkers at TecAccess that are making sure the world continues to listen.

Though the law does not apply to private industry, Sean is helping business leaders across the country realize the economic impact and market share that is currently up for grabs for those who make their electronic and information technology accessible.

He and his colleagues explain that to understand the impact of computer users with disabilities, one has to look no further than the 2000 U.S. Census which indicates that people with disabilities are one of the largest and fastest growing minority groups. It is becoming clear that public and private entities who make their technology accessible can reach a largely untapped market, which the President's Executive Committee on Employment of People with Disabilities says represents over \$220 billion in discretionary income.

Industry analysts expect that this buying power will quickly exceed the \$1 trillion mark in the years ahead. The compelling evidence of the purchasing power of this market segment makes it clear that businesses need to conduct operations in ways that will attract customers with disabilities to their goods and services.

Because of this realization across the globe, Sean is now finding more and more aspects of technology becoming easier to use in his personal life despite his physical limitations. Best of all, his job role at TecAccess ties directly into this movement, as he is hired to assist clients from all backgrounds to better understand the return on investment for those who make their technology accessible to all user groups.

Sean, along with 60 of his co-workers, many of whom have disabilities, continues to lead this charge.

Best of all, Sean is allowed the opportunity to use his unique perspective of having a disability as a key component to the accessibility advice he doles out to clients each day. In return, he is effectively shaping the world of accessible technology far past his home town of Richmond, teaching others the social, legal and pro-business aspects of accessible design.

6. The Numbers

Currently, the American Association of People with Disabilities (AAPD) estimates that the number of people with disabilities is dramatic, impacting an estimated 1 in 3 households or roughly 60 million Americans. Throughout the world, this translates into over 600 million people with disabilities.

In the US, as with many parts of the world, there is another factor to consider. Adding to this US population is the 76 million strong "Baby Boom" generation. With the leading edge of this demographic having turned 60 in 2006, the Administration on Aging projects that we will see a dramatic leap in the number of people developing disabilities for the first time in their lives — disabilities such as, but not limited to: vision, hearing, mobility, and cognitive impairments. In fact, the U.S. Department of Labor Office of Disability Employment Policy indicates that as the population ages, approximately 40% of those over 65 will likely acquire a disability.

An inclusive and universal design approach to technology is critical to both federal agencies and private industry wishing to anticipate future needs of this growing population, an untapped market that is fast becoming a prized consumer niche.

7. Spending Power Aside, It's the Law



As earlier discussed, the magnitude of this spending power aside, access to electronic and information technology by persons with disabilities is protected by the federal mandate known as Section 508 of the U.S. Rehabilitation Act, as well as other legislation designed to promote equal access to technology.

Although Section 508 refers to technology that is developed or purchased by the Federal Government, accessibility is quickly becoming an important mandate in the private sector as well. Companies that have responded to this growing consumer base -- comprised

of “Baby Boomers,” senior citizens, and persons with disabilities – have developed greater market share by considering accessibility in all stages of product development and marketing.

In addition, many in private industry wishing to do business with the Federal market are now discovering that complying to Section 508 of the US Rehabilitation Act gives government contractors the upper hand.

There are other legal obligations effecting accessibility as well. The Americans with Disabilities Act (ADA), for example, also prohibits discrimination against people with disabilities. Title II of the ADA requires that state websites be accessible. Reasonable accommodations must be made for disabled users. The National Federation of the Blind settled a lawsuit with AOL after the internet giant committed to make version 6.0 of its software accessible to the visually impaired. Likewise, the Sydney Olympic Committee lost in court and was ordered to make the Olympics website accessible to blind users.

Interestingly, in some states, like Virginia, the government has also put into place efforts such as the *Virginia IT Accessibility Standard*. This Standard requires that Commonwealth employees and citizens with disabilities have access to and use of information and data comparable to the access and use by people who do not have disabilities.

So who benefits from these laws? That’s easy – we all do. More specifically though, there is a marked increase in productivity and participation of employees with disabilities or those working with environmental, physical, or sensory limitations. In addition, companies that comply gain a competitive edge over competitors, as their products and services reach a wider scope of customers. Complying with the law not only provides business incentives for private industry, but it also reduces barriers to customers and employees with disabilities. And obviously, taking Section 508 seriously minimizes the liability from potential noncompliance.

8. Defining Market

Now that accessibility is evolving into a sound business practice for private industry, how does one define the market, and most important – how do you reach this untapped consumer?

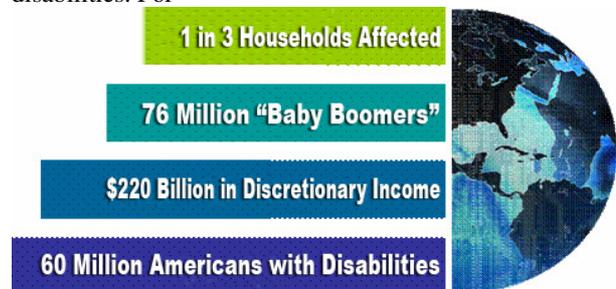
Around the world, more than 600 million people with disabilities are gaining recognition as a significant and growing market for products and services, and they are making their needs and expectations known. Using information and communication technology that is

accessible is the fastest way in which to reach people with disabilities and the elderly.

Millions of people with disabilities regularly travel, shop, and eat out with family and friends. A 1990 study by the U.S. Department of Education found that 20.3 million families in the U.S. have at least one member with a disability. The 2000 U.S. Census reported that almost 42% of older adults (65+ years) have one or more disabilities.

The percentage of people with disabilities is larger than any single ethnic, racial, or cultural group in the U.S. At 19.3%, the number of people with disabilities exceeds the next largest group -- Hispanic people (14.9%) -- by a fairly wide margin.

The 2000 U.S. Census stated that at least 16% of the people in each of the Census’ defined ethnic, racial, and cultural groups self-identified as having disabilities. For



example: 24.3% of both African Americans and American Indians/Alaska Natives, 20.9% of Hispanics/Latinos, 18.5% of Whites, and 16.6% of Asians reported disabilities.

Why should you care? If for no other reason -- spending power; the large and growing market of people with disabilities has almost two times the spending power of teens and more than 17 times the spending power of tweens (8-12 year-olds), two demographics sought after by businesses.

Marketing studies of the Atlanta Paralympics (Solutions Marketing Group, 2003) reveal that even households with no disability connection felt goodwill towards companies that included people with disabilities in advertising and were more likely to buy their products.

Couple these facts and apply them to almost any industry, and the answer is clear: Accessibility makes good business sense. For example:

- An Open Doors Organization study estimated in 2003 that diners with disabilities would spend \$35 billion in restaurants that year. The study found that more than 75% of people with disabilities eat out at restaurants at least once a week.

- The New York Times reported that spending by travelers with disabilities exceeds \$13.6 billion annually.
- The National Captioning Institute recently found that 66% of captioned TV viewers are more likely to buy a product that has a captioned commercial; 53% will actively seek out products advertised with captions; and 35% will switch to brands that use captioned ads.
- AARP says that 4 million Americans turn 50 each year and that people age 50 and older spent nearly \$400 billion in 2003. At age 50, adults are likely to experience age-related physical changes that may affect hearing, vision, cognition, and mobility. While they may not think of themselves as having disabilities, people in this age group often seek out businesses that accommodate those changes by offering more accessible products and services.

And the benefits do not stop in the U.S. market, as the World Health Organization (WHO) also estimates the power of the 600 million people with disabilities around the world and provides plenty of examples of their global spending power. For example:

- United Kingdom: The Institute of Employment Studies reported that in 1999, Britons with disabilities had a disposable income total of £50 billion.
- Australia: The Australian Bureau of Statistics estimated that Australians with disabilities have a discretionary income of at least AUS \$26 billion.
- Canada: The Conference Board of Canada reported in 2001 that the combined annual disposable income of working-aged Canadians with disabilities was CAN \$25 billion.

This huge customer market can represent additional business and profit for your enterprise. And for government this population represents an underserved demographic. Either way, accessibility attracts not only people with disabilities, but also their families and friends. Like anyone else, customers and consumers with disabilities often visit stores, government offices, restaurants, movie theaters, and other businesses accompanied by family or friends. This expands the potential market exponentially!

The key point to remember is that everyone benefits when businesses and government give customers with disabilities an equal opportunity to obtain their goods and services. By positively recognizing customers of all ability levels, businesses and government can make it

easier for people with disabilities, as well as other customers, to access or purchase the services or products they have to offer. In other words, accessibility pays dividends and makes good business sense.

Making it possible for customers with disabilities to purchase your goods and services is not only an important part of complying with laws such as ADA and Section 508 in the US, along with a growing surge in international law, but it is also an important part of any business plan or government strategic plan.

Think about it, in the 80s and 90s we built ramps and elevators in lieu of stairs for people with disabilities to better access goods and services. Now it is time that we build ramps to technology!

9. Who's Doing it Right?

Best Practice Examples—Let's take for example, Hewlett Packard and examine their efforts as a "Best Practice."

Hewlett Packard's goal is to develop technology that can meet the growing demand and expectations of consumers worldwide, including people with disabilities and age-related issues. HP provides extensive Executive Support:

- For example, accessibility has become "proceduralized" at all levels of HP - from management to marketing - which maximizes the company's potential to develop truly accessible electronic and information technology products.
- HP uses what they call the "Total Customer Experience" or TCE. HP looks at all of the touch points, from how a customer selects their product, to how the customer will use their product.
- HP also stresses Self Conformance -Though not required by law, HP designs all products and websites towards Section 508 and W3C guidelines.
- HP provides detailed VPATs/Supports the Buy Accessible Wizard - HP provides summary-level and detailed VPATs for all products through an online VPAT Database, and provides accessibility/VPAT information for all products through the GSA Buy Accessible Wizard (BAW)
- HP's AT Partner Program - HP partners with over 50 AT vendors to develop assistive technology on HP technology (desktops, notebooks, handhelds, printers, scanners, etc).

HP tests AT products and includes those results in their VPATs, and HP supports Microsoft and AT vendors in porting their applications to next generation operating systems

Similar to HP, **IBM** has invested years in research to better understand the needs of people who experience a wide range of physical impairments or other difficulties that can affect their computer use and they continue to do so. Here's how they do it. IBM is an industry leader, serving as a Best Practice:

- IBM's slogan – Innovation for everyone. Enough Talk. Let's Make it Happen. No other accessibility leader today has said it better; IBM has demonstrated an understanding of the wide range of differences and abilities, and has turned questions of accessibility upside down. "Instead of creating a world of ideal forms to which we then find ways for people to adapt themselves," IBM asks, "Shouldn't we be adapting the world to the people."
- IBM has pioneered the cause to open the world of information technology (IT) to more people, regardless of ability or disability. IBM's long-standing commitment to people with disabilities began in 1914, when IBM hired its first disabled employee, 76 years before the Americans with Disabilities Act (ADA). From its fair hiring practices, to its dedication to making products and services accessible, to its commitment to research, IBM has been an industry leader in the accessibility arena for more than 50 years.
- For these efforts, IBM is the winner of the 21st Century Business Partner Award by Goodwill International. In addition, IBM is the winner of the Helen Keller Award, and countless Disability Employment Awareness Awards and Business Awards for Partnership Programs with People with Disabilities. In addition, employees such as IBM's Sr. Project Manager have received such distinctions as the National People with Disabilities Professional Achievers Award from the President of India.
- What began early on as a philanthropic effort has evolved into a business transformation effort for IBM and its clients. IBM, along with all of private industry, is now seeing both the public and private sectors driving accessibility adoption.
- In 2000, IBM merged existing accessibility groups to form a worldwide Accessibility Center with locations in the United States, Europe,

Japan and Australia. The Accessibility Center fosters product accessibility, works toward the harmonization of worldwide standards, applies research technologies to solve problems experienced by people with disabilities, creates industry-focused solutions and generates accessibility awareness.

- Helping people with disabilities access IT requires innovative technology. As part of the IBM Research organization, the Accessibility Center has a direct line to the scientists developing new technology. After promising ideas emerge from IBM Research, the Accessibility Center works with influencers, advocacy groups and clients to pilot these technologies. Successful pilot programs are turned into offerings that help more people access IT - regardless of ability or disability.
- As accessibility has evolved into a business transformation effort, IBM has remained dedicated to recruiting and hiring people with disabilities and helping them to be successful in the workplace. IBM advocates for people who have disabilities by instituting and maintaining favorable hiring practices and sponsoring education and employment programs.

Similar to the success of IBM and HP, are plenty of other best practices to be found within the U.S. Federal Government.



The U.S. Patent and Trademark Office is one of the best accessibility success stories. In fact, the USPTO has hired over 60 federal employees with disabilities due to their success!

The USPTO and its skilled employees today train vendors that do business with the government so that they too can "proceduralize" accessibility and Section 508 in their businesses. "Proceduralizing" accessibility is in effect a way to embrace it as part of one's business or organization.

To assist in this process, the USPTO hosts hundreds of free training courses each year.

- In 2005, over 2,000 participants – government employees as well as private contractors – received training in everything from accessible

software and web development, to telecommunications and PDAs.

- As a result, the contractors and vendors that participated in the accessibility trainings produced products faster, better, and cheaper than those that did not learn the benefits of accessible design.
- The end result – yes, Section 508 is the law, but it also saves money, increases productivity, and improves the quality of the end product
- USPTO believes that the Section 508 process should start from DAY 1. As a vendor begins to create their product, the USPTO will evaluate the progress so that there are no surprises when the product is finally tested.
- The “evaluation team” keeps vendors on schedule, saving them time and money, so that the product is compliant before testing – opposed to other federal agencies that evaluate after testing, causing vendors to have to retrofit later.
- Because of the USPTO’s standardized approach, private industry and government are more productive and fiscally efficient.
- In fact, because of their ability to “standardize” Section 508 compliancy, the USPTO saves \$19,000 per person a year, proving that it pays to make reasonable accommodations.
- They calculate their cost savings now that they are building compliance up front and don’t have to pay for remediation and retrofitting. They have embraced accessibility practices from the beginning.
- For these efforts, the USPTO earned the “Federal Government Best Practice for Outstanding Individual Federal Team,” and its E&IT Coordinator received the “Change Agent” Award by the Office of Civil Rights.

10. Results

- By implementing some of these very simple and cost effective strategies, organizations can anticipate setting themselves apart – creating a market differentiator.
- Organizations can increase Federal Government sales, and/or better services to citizens, by demonstrating and documenting product accessibility.
- Organizations can leverage a new market segment by demonstrating their leadership in the growing accessibility movement, and therefore capturing a valuable customer base that is

currently up for grabs. Or in the case of government, a citizen base that is currently awaiting more accessible services for all.

- Organizations can increase their public image and socially conscious standing by demonstrating their embrace of all customers – those with disabilities, those without disabilities, those who may be aging and acquiring a disability for the first time in their lives, etc.
- Enables organizations to use accessible products to recruit and hire from an untapped, qualified labor pool.
- Organizations will also gain loyalty of users and positive brand recognition from those who rely on accessible products and services.

In carrying forward this message; let’s now examine some key factors in developing a successful plan to promote your dedicated efforts.

- First, you must promote your accessibility solution up front. Use it to set your organization apart, leverage the steps that you’ve taken, be proud of them, and make sure others are aware of your efforts.
- Get the “right” people involved. Create an accessibility team, or host of experts on the topic. Partner with experts in the field, and whenever possible, ask a person with a disability how you’re doing – using a person with a disability to test the accessibility and usability of your product or service will allow for him or her to use a first hand perspective as to what does and does not work.
- Become a trusted advisor, set yourself apart as experts on this topic, and leverage this knowledge to attract new customers, new employees, and new partners.
- Understand the buyer – or citizen -- motivation and requirements. Understand that this market is no different from the rest of us – we all know someone with a disability and I’m sure we can all agree that his or her life is improved when given the opportunity to access the same technology that we do.

Becoming a Trusted Advisor:

- Provide a means to evaluate your product.
- Raise the bar, by highlighting key differences from competitors.

Unique Selling Proposition:

- Promote your “accessibility story” based on history and commitment.
- Promote your knowledge regarding accessibility in general, as well as your accessibility law and accessible product/service knowledge.

11. Moving Forward

- The compelling evidence of the size and purchasing power of this market segment makes it clear that both private industry and government should continue to conduct operations in ways that will attract customers with disabilities to their goods and services, as well as make public services accessible to all citizens.
- Government and industry should consider leveraging the growing global population of ageing users of technology as a separate market segment by providing accessible products and solutions. Providing accessible E&IT products and services will serve as a market differentiator.
- Private industry needs to ensure that marketing efforts are reaching this audience. There is a current misconception by many companies that the online market is strictly for those under 30 and for those without disabilities. Industries should make certain that they appropriately target this target group or they will limit their opportunities posed by the older generations and the growing number of people with disabilities.
- Government and industries should continue to focus their products and services on growing this consumer base -- comprised of “Baby Boomers,” senior citizens, and persons with disabilities – in order to provide quality services, develop greater market share by considering accessibility in all stages of product development and marketing.
- Around the world, people with disabilities are gaining recognition as a significant and growing market for products and services, and they are making their needs and expectations known. Private industries and government need to continue to address the needs of its diverse customer population.

As the pool of knowledge workers continues to shrink, government and industry need to develop and put in place programs to keep older workers and attract people with disabilities by investing in accessible training programs and flexible work schedules, and

offering to hire retiring employees on a consultant basis.

If government and industry invest in the right resources and accommodations, they will become an “employer of choice” which will attract and retain the skilled workers they will need in the years to come.

Private industries and government will benefit by nurturing this customer and citizen base, as it will lead to market coherence with innovative solutions, rather than mandating detailed technical prescriptions.

If government and industry does not continue their development of accessible products and services, they will be missing out on a huge revenue opportunity, and may limit their ability to sell to, and serve, certain entities.

By not addressing programs to keep older workers and attract people with disabilities by investing in training programs, flexible work schedules, and adjusted benefits, government and industry will lose their “brain share” over the next several years.

An important risk for industry and government comes from the potential for mandated compliance to a diverse suite of fragmented E&IT accessibility standards. For those regions where harmonization of standards is not achieved, either by influence of government or lobbying by industry, E&IT companies may face a significantly increased cost of sales to develop, test and maintain products.

- All government and industry need to continue to monitor legislation and regulations.
- Industry and government should consider specific marketing plans targeting people with disabilities and Baby Boomers.
- Government and industry should consider the 3-R's of being disability friendly – Revenue, Reality and Relationships.
- Industry and government should always use promotional and marketing materials that challenge and overcome stereotypical, patronizing, and sentimental attitudes about disability.
- Government and industry should consider this emerging market made up of people with disabilities and age-related disabilities. The most successful promotional campaigns have realized an untapped demographic, a powerful force that crosses over every single targeted social group to date – people with disabilities. This demographic affects everyone – regardless of age, race, gender, income level, sexual orientation, etc.

- For any government or industry leader to be successful, there has to be a consumer with a need. Without that, you have nothing. There are 600 million plus buyers with disabilities worldwide, controlling billions in discretionary income. In order for government and industry to reach this clientele, there must be an accessible solution. Therefore services and products should always address accessibility before any other action is taken.
- Historically, there has been a major disconnect between private industry, government, and individuals with disabilities. Though a booming demographic, with dollars to spend and voting power, people with disabilities should no longer be left off the radar.
- Let's not forget about employees with disabilities as well. In the past, employers would not even consider employees with disabilities in high-tech and management positions as an option. Yet, research has unequivocally proven that people with disabilities can lead the way in all levels of management in private industry and government.
- Research has shown that people with disabilities: Have a lower rate of employment turnover. Have an above average attendance rate. Are educated, motivated, reliable, and skilled. Raise awareness (and can improve) workplace safety for everyone. Add diversity to the workplace which leads to better teamwork, widening customer bases and an increase in staff morale. Have the potential to become a valuable asset to the workplace when given the opportunity.
- We know it and research proves it – but how do we move forward, how to do we share with the world what we know the disabled community can accomplish? One way is through TECHNOLOGY. Today's improvements in accessible Electronic and Information Technology (E&IT) have not only opened a new market segment, but it has also helped lead to higher-level, higher-paying job roles for employees who have disabilities.
- Personal computers (PCs) and assistive technology for users with disabilities is improving fast. The number of people with disabilities wishing to learn to use this technology is increasing year by year. Since the PC is very useful for people with disabilities, especially in the workforce, a lot of people with disabilities using PCs, and various technologies, now say, "I cannot imagine my life without the

PC." Thus, the PC is now indispensable for the life of people with disabilities. This is natural because people with disabilities can get lots of different kinds of information through communicating by electric mails or using the Internet.

12. Conclusion



If your services and products prove functional and adaptable according to the user's skills and needs, then individuals with disabilities become more independent and more productive members of society.

The benefits of usable and accessible design extend beyond the people with disabilities and the elderly, reaching firmly into supporting the needs of all people.

The way to master accessible technology is very challenging, but possible! The disabled community, along with the scientific community, needs to take note of what's working and continue this push -- a push towards a more inclusive environment through assistive and accessible technology.

The examples presented in this paper can be started, not tomorrow, but at once, if there were more social understanding especially about the fact that people with disabilities have the capability to work, access services, and purchase products.

It is up to everyone to take the lead; we must pave the way to ensure that myths are shattered, that opportunities are provided, and that assistive technology becomes widely available to all.

An example of such leadership can be found in the employees with disabilities working at TecAccess, and other technology positions around the world. Despite living with daily challenges, these highly skilled employees utilize assistive technology while interacting in boardrooms with large corporations and government agencies.

These types of examples are changing attitudes, and changing environments -- and they begin with us. Obviously training is still needed for employers and employees alike to better understand the topic of disability, appropriate accommodations, and assistive technology.

But what better person to lead the way, than a person with a disability -- a person, who despite having

a disability, is a dynamo in the workplace...a person that can energize both private industry and government.

There is nothing the disabled community cannot accomplish given the confidence, the mentoring, and the tools. The employees with disabilities working at TecAccess have found their path; they have found their way to encourage this change.

Find your path, and lead by example.

- Get involved in the technology industry, and educate others in accessible solutions for people with disabilities. Stay at the cutting edge of these new technologies!
- Whenever possible, evaluate new and existing technology.
- Promote its development.
- Spread its availability!
- See to it that assistive technologies penetrate the tiniest recesses of the business community and government.
- Bridge the gap between the academic, economic, and technology worlds.
- Work in tandem with employees with and without disabilities.
- Empower yourself and co-workers with disabilities by striving towards prominent positions.
- Encourage government and industry to include people with disabilities and trust them to carry through and complete the task for which they have been given responsibility.
- Encourage people with disabilities to use accessible technology to help lead the way.
- Private industry and government must be *made aware* that there are tools available right now, that allow workers with disabilities to perform at the same level as their peers, that allow customers to purchase their products, and that allow citizens to access public services.
- *Facilitate* public-private cooperation by organizing interactive conferences, workshops and focus groups ensuring representation from people with disabilities using the latest in assistive technology.
- *Elevate* the business response to the emerging accessibility market by promoting best practices, e.g., identify experts who can help business become more effective in responding to accessibility needs.
- *Remind* employers that developing and testing accessible technology is an ongoing process, not a destination.

- *Spread the word* -- Accessibility must be integrated at all touch points of the employee/customer/citizen experience.

In conclusion, I encourage you to remember these success stories, and to look within your respective work and business environments. Think about what you can do for someone with a disability! Find creative ways to make it happen. *Consider how technology may help!*

And, if you are a person with a disability, I encourage you to boldly pursue your dreams and achieve your goals.

13. References

Administration on Aging, (2007, March 1). "Statistics: Aging into the 21st Century." Retrieved March 1, 2007, from www.aoa.gov/prof/Statistics/future_growth/aging_21.asp

David Koepfel. "Business Travel: Hotels Learn to Deal with Disability" The New York Times on the Web. 17 February 2004, Retrieved on March 1, 2007, from www.nytimes.com/2004/02/17/business/17disabled.html

Dorsey, Moira. "Use Disability Experts to Test Accessibility." Forrester Research, (2004): In Forrester Research [database online], Cited March 1, 2007. Available from Forrester Research, <http://www.forrester.com/Research/Document/Excerpt/0,7211,34541,00.html>

Employers' Forum on Disability, (2007, March 1). "Disability in the UK – 2005," Retrieved March 1, 2007, from www.employers-forum.co.uk/www/cgcasts/info/disability.htm

Forrester Research, (2007, March 1). The Market for Accessible Technology, Retrieved March 1, 2007, from <http://www.microsoft.com/enable/research/phase1.aspx>

National Telecommunications and Information Administration, (2007, March 1). Falling Through the Net: Toward Digital Inclusion, Retrieved March 1, 2007, from <http://www.ntia.doc.gov/ntiahome/fitn00/Falling.htm#61>

National Institute on Disability and Rehabilitation Research, (2007, March 1). NIDRR Chartbook, Retrieved March 1, 2007, from <http://www.infouse.com/disabilitydata/workdisability.html>

NCI, (2007, March). "Commercial and Infomercial Captioning," Retrieved March 1, 2007, from www.ncicap.org/commcap.asp

The National Center for Health Statistics, (2007, March 1). Data Warehouse, Retrieved March 1, 2007, from <http://www.cdc.gov/nchs/datawh.htm>