

Access and Multi-lingual Content Management for e-Government



Exposure Draft

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National Electronic Commerce Coordinating Council

The National Electronic Commerce Coordinating Council (**NECCC**) is an alliance of national state government associations dedicated to the advancement of electronic government within the states. The Council is comprised of the National Association of State Auditors, Comptrollers and Treasurers (**NASACT**), the National Association of State Chief Information Officers (**NASCIO**), the National Association of State Purchasing Officials (**NASPO**), and the National Association of Secretaries of State (**NASS**). In addition to these voting members, other governmental and private organizations participate in an advisory capacity. These associations include the Information Technology Association of America (**ITAA**), the National Automated Clearing House Association (**NACHA**), the National Association of Government Archives and Records Administrators (**NAGARA**), the National Association of State Chief Administrators (**NASCA**), the National Association of State Treasurers (**NAST**), and the National Governors Association (**NGA**). ITAA and NACHA represent private information technology companies and the financial services and technology industries.

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I. Executive Summary

Multi-lingual Content Management has become important for States with large ethnic diversities, particularly when we talk of Government Services requiring Citizen-facing systems and Citizen-to-citizen Exchange or Peer-to-peer. Businesses and government agencies are increasingly faced with accessibility requirements. The *Federal Information Technology Accessibility Initiative (FITAI)*, an interagency effort, coordinated by GSA, to offer technical assistance provides means of cooperation and sharing of information on implementation of Section 508 - *Section 508 Website*. Section 508 will promote competition in the technology industry by clarifying the Federal market's requirement for accessibility in products intended for general use.

For more than a year, the federal government has urged agencies to overhaul their Web sites to comply with *accessibility standards that took effect from June 21, 2001*. Now, agencies need to be offered new guidance— steps that might head off complaints and lawsuits for failure to comply.

Federal agencies must purchase electronic and information technology that is accessible to employees and the members of the public - *providing* that it is not an undue burden on the agency. This means that if two companies are bidding a government contract and one is offering accessible solutions, then the accessible technology is likely to win the contract. In particular, multi-lingual content management is becoming Key. This would have future implications on e-Gov Application Interfaces and language, including displays and voice-output systems.

II. How Accessible are State and Federal Web sites?

In September, the results of a study of “State and Federal E-Government in the United States” by Brown University’s Taubman Center for Public Policy was released. The study of 1,680 state and federal government websites found that:

- Only six percent of sites offered any sort of foreign language translation feature, up slightly from the 4 percent found last year
- Twenty-seven percent of government websites have some form of disability access, up from 15 percent last year

The report included the following statement:

“Disability access is vitally important to citizens who are hearing impaired, visually impaired, or suffer from some other type of handicap. If a site is ill-equipped to provide access to individuals with disabilities, the site fails in its attempt to reach out to as many people as possible.”

In October, the results of a study of city government Websites by Brown University’s Taubman Center for Public Policy were released. The following is a brief summary of the analysis of 1,506 government websites in the 70 largest metropolitan areas:

1. Only 7 percent of sites are multi-lingual, meaning that they offer two or more languages
2. Only 11 percent of government websites have some form of disability access, meaning access for persons with disabilities

III. State and Local Government Accessibility Issues and Requirements

The National Governor’s Association’s (NGA) Center for Best Practices has designed an e-Gov toolkit which is organized into two major categories: streamlining state operations, and improving customer service. In the section “Responding to Customer Needs” they identify two key issues:

1. Provide resources to state agencies to ensure that their web sites are compliant with federal ADA standards
2. Implement policies that make the Internet accessible to all customers

Compliance under Title II of the Americans with Disabilities Act (ADA) is an important issue for state and local governments. In September 1996, the Civil Rights Division of the Department of Justice (DOJ) issued an opinion statement (letter #204) which directly addressed the issue of web accessibility. "States and local governments as well as places of public accommodation are required to ... provide effective communication, regardless of whether they generally communicate through print media, audio media, or computerized media such as the Internet. Covered entities that use the Internet for communications regarding their programs, goods, or services must be prepared to offer those communications through accessible means as well."

The National Council on Disability (NCD) released a report "The Accessible Future" that also addresses additional planning requirements. Under Chapter III "The Legal Framework of Information Technology Access Rights" 2. Public Services:

"Of particular note in connection with the requirements of the law for planning ahead for accessibility are statements contained in the Department's April 20, 1999, CSU Long Beach settlement letter: A public entity has an affirmative duty to establish a comprehensive policy in compliance with Title II in advance of any request for auxiliary aids or services."

1. What is the Americans with Disabilities Act (ADA)?

Prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, state and local government services, public accommodations, commercial facilities, and transportation. The ADA requires that reasonable accommodations be provided in meeting the needs of individuals with disabilities. Additional technical

assistance regarding the ADA is available through the *ADA Technical Assistance Program*.

2. What is the Assistive Technology Act of 1998?

The Assistive Technology Act establishes a grant program, administered by the U.S. Department of Education to provide Federal funds to support State programs that address the assistive technology needs of individuals with disabilities. Participating states were sent letters in 1999 and 2000 that indicated that states in the program were required to comply with Section 508. However, no one can say for sure how this applies, until the issue is decided in the courts.

Buy Accessible represents a partnership between government and industry to provide a service to federal procurement staff. It will assist government personnel in completing market research necessary to ensure that they are buying the most accessible IT products and services available in order to conform to Section 508.

IV. Section 508

1. What is Section 508?

Section 508 requires that Federal agencies electronic and information technologies are accessible to people with disabilities. In December 1999, the Federal Access Board, the Architectural and Transportation Barriers Compliance Board, established by Section 502 of the Rehabilitation Act, published the Information Technology 508 standards. The Rehabilitation Act can be found at 29 United States Code Section 792. The Center for Information Technology Accommodation (CITA), in the U.S. General Services Administration's Office of Governmentwide Policy, has been charged with the task of

educating Federal employees and building the infrastructure necessary to support Section 508 implementation. Using this web site, Federal employees and the public can access resources for understanding and implementing the requirements of Section 508.

Inaccessible technology interferes with an individual's ability to obtain and use information quickly and easily. Section 508 was enacted to eliminate barriers in information technology, to make available new opportunities for people with disabilities, and to encourage development of technologies that will help achieve these goals. The law applies to all Federal agencies when they develop, procure, maintain, or use electronic and information technology. Under Section 508 (29 U.S.C. ' 794d), agencies must give disabled employees and members of the public access to information that is comparable to the access available to others.

2. Summary of Section 508 Standards

A. General Standards

The standards define the types of technology covered and set forth provisions that establish a minimum level of accessibility. The standards cover the full range of electronic and information technologies in the Federal sector, including those used for communication, duplication, computing, storage, presentation, control, transport and production. This includes computers, software, networks, peripherals and other types of electronic office equipment. The standards define *electronic and information technology*, in part, as "any equipment or interconnected system or subsystem of equipment, that is used in the creation, conversion, or duplication of data or information."

Subpart A also explains what is exempt, defines terms, and generally recognizes alternatives to what is required that provide equal or greater access. Consistent with the law, the standards *exempt* systems used for military command, weaponry, intelligence, and cryptologic activities (but not routine business and administrative systems used for other defense-related purposes or by defense agencies or personnel). The standards

also exempt "back office" equipment used only by service personnel for maintenance, repair, or similar purposes.

The standards cover technology procured by Federal agencies under contract with a private entity, but apply only to those products directly relevant to the contract and its deliverables. An exception clarifies that the standards do not apply to technology that is incidental to a Federal contract. Thus, those products that are not specified as part of a contract with a Federal agency would not have to comply with the standards. For example, a firm that produces a report for a Federal agency under a contract would not have to procure accessible computers and word processing software even if they were used exclusively for the contract; however, compliance would be required if such products were to become the property of the Federal agency as contract deliverables or if the Federal agency purchased the products to be used by the contractor as part of the project. If a Federal agency contracts with a firm to develop its web site, the standards would apply to the new web site for the agency but not to the firm's own web site.

B. Technical Standards

The standards provide criteria specific to various types of technologies, including:

- software applications and operating systems
- web-based information or applications
- telecommunication products
- video and multimedia products
- self contained, closed products (e.g., information kiosks, calculators, and fax machines)
- desktop and portable computers

This section provides technical specifications and performance-based requirements, which focus on the functional capabilities of covered technologies. This dual approach recognizes the dynamic and continually evolving nature of the technology involved as

well as the need for clear and specific standards to facilitate compliance. Certain provisions are designed to ensure compatibility with adaptive equipment people with disabilities commonly use for information and communication access, such as screen readers, Braille displays, and TTYs.

Software Applications and Operating Systems

Most of the specifications for software pertain to usability for people with vision impairments. For example, one provision requires alternative keyboard navigation, which is essential for people with vision impairments who cannot rely on pointing devices, such as a mouse. Other provisions address animated displays, color and contrast settings, flash rate, and electronic forms, among others.

Web-based Intranet and Internet Information and Applications

The criteria for web-based technology and information are based on access guidelines developed by the Web Accessibility Initiative of the World Wide Web Consortium. Many of these provisions ensure access for people with vision impairments who rely on various assistive products to access computer-based information, such as screen readers, which translate what's on a computer screen into automated audible output, and refreshable Braille displays. Certain conventions, such as verbal tags or identification of graphics and format devices, like frames, are necessary so that these devices can "read" them for the user in a sensible way. The standards do not prohibit the use of web site graphics or animation. Instead, the standards aim to ensure that such information is also available in an accessible format. Generally, this means use of text labels or descriptors for graphics and certain format elements. (HTML code already provides an "Alt Text" tag for graphics which can serve as a verbal descriptor for graphics). This section also addresses the usability of multimedia presentations, image maps, style sheets, scripting languages, applets and plug-ins, and electronic forms.

The standards apply to Federal web sites but not to private sector web sites (unless a site is provided under contract to a Federal agency, in which case only that web site or

portion covered by the contract would have to comply). Accessible sites offer significant advantages that go beyond access. For example, those with "text-only" options provide a faster downloading alternative and can facilitate transmission of web-based data to cell phones and personal digital assistants.

Telecommunications Products

The criteria of this section are designed primarily to ensure access to people who are deaf or hard of hearing. This includes compatibility with hearing aids, cochlear implants, assistive listening devices, and TTYs. TTYs are devices that enable people with hearing or speech impairments to communicate over the telephone; they typically include an acoustic coupler for the telephone handset, a simplified keyboard, and a visible message display. One requirement calls for a standard non-acoustic TTY connection point for telecommunication products that allow voice communication but that do provide TTY functionality. Other specifications address adjustable volume controls for output, product interface with hearing technologies, and the usability of keys and controls by people who may have impaired vision or limited dexterity or motor control.

Video or Multimedia Products

Multimedia products involve more than one media and include, but are not limited to, video programs, narrated slide production, and computer generated presentations. Provisions address caption decoder circuitry (for any system with a screen larger than 13 inches) and secondary audio channels for television tuners, including tuner cards for use in computers. The standards also require captioning and audio description for certain training and informational multimedia productions developed or procured by Federal agencies. The standards also provide that viewers be able to turn captioning or video description features on or off.

Self-Contained, Closed Products

This section covers products that generally have imbedded software but are often designed in such a way that a user cannot easily attach or install assistive technology. Examples include information kiosks, information transaction machines, copiers, printers, calculators, fax machines, and similar types of products. The standards require that access features be built into the system so users do not have to attach an assistive device to it. Other specifications address mechanisms for private listening (handset or a standard headphone jack), touch screens, auditory output and adjustable volume controls, and location of controls in accessible reach ranges.

Desktop and Portable Computers

This section focuses on keyboards and other mechanically operated controls, touch screens, use of biometric form of identification, and ports and connectors.

3. Functional Performance Criteria

The performance requirements of this section are intended for overall product evaluation and for technologies or components for which there is no specific requirement under the technical standards in Subpart B. These criteria are designed to ensure that the individual accessible components work together to create an accessible product. They cover operation, including input and control functions, operation of mechanical mechanisms, and access to visual and audible information. These provisions are structured to allow people with sensory or physical disabilities to locate, identify, and operate input, control and mechanical functions and to access the information provided, including text, static or dynamic images, icons, labels, sounds or incidental operating cues. For example, one provision requires that at least one mode allow operation by people with low vision (visual acuity between 20/70 and 20/200) without relying on audio input since many people with low vision may also have a hearing loss.

Information, Documentation, and Support

The standards also address access to all information, documentation, and support provided to end users (e.g., Federal employees) of covered technologies. This includes user guides, installation guides for end-user installable devices, and customer support and technical support communications. Such information must be available in alternate formats upon request at no additional charge. Alternate formats or methods of communication, can include Braille, cassette recordings, large print, electronic text, Internet postings, TTY access, and captioning and audio description for video materials.

The Information Technology Industry Council (ITI) is hosting a Voluntary Product Accessibility Template on their site which will allow vendors, who choose to participate, the ability to copy the template and complete it to describe how a particular product or service they offer conforms to Section 508 Access Board standards. This template should be placed on the vendors accessible web site and the link to the template provided to the Buy Accessible database.

Government procurement staff will be able to search the site by specific product or service type and see all vendors who have provided links. They can then use the links to reach the template information and product or service descriptions necessary to complete their market research.

Vendor participation is voluntary. The vendors will be maintaining their own information on their site. The government does not endorse or guarantee the accessibility of any product listed. This database is provided strictly to facilitate the market research and selection processes of Federal agencies. Federal personnel should also note that additional market research may be necessary as some vendors may not yet have updated the database with their product information. Under Section 508 FAR guidance, due diligence is required in the conduct of market research and requirements development relative to Section 508 requirements.

The Access Board's Standards for Electronic & Info Technology
(<http://www.access-board.gov/>)

Section 508 - <http://www.access-board.gov/news/508-final.htm>

This website is of key importance in Section 508 issues as it was the Access Board that finalized the standards for the law. Here one can access the Final Standards, find a number of helpful overviews and learn about the development of the law.

Section 255 of the Telecommunications Act of 1996 – <http://www.access-board.gov/telecomm/html/telfinal.htm>

Here you can read the final version of the law, and gain understanding of how Section 508 and the Telecommunications act interact with and benefit each other, promoting accessibility.

V. Status Update on Accessibility Implementation

Accessibility tests conducted on more than 2,700 Web pages on several federal sites revealed that hundreds still did not meet standards for making Web sites accessible to people with disabilities. As of June 21, agencies can be sued for posting Web pages inaccessible to people with vision impairments, hearing problems, limited dexterity and other disabilities. Meanwhile, the U.S. Access Board, which wrote the accessibility standards, cautioned that it is at times difficult to tell whether Web pages are accessible.

1. The Accessible Future

The National Council on Disability (NCD), in June 2001, released a report, "*The Accessible Future*", which calls for a strong private-public partnership to enhance such

current statutes as the Americans With Disabilities Act, Section 508 of the Rehabilitation Act and Section 255 of the Communications Act -- the latter of which requires telecommunications manufacturers and service providers to make their products and services accessible to people with disabilities. Section 508 took effect in June 2001. According to NCD estimates there are:

- about 54 million Americans with some level of disability
- about 8 percent of those who use the Web have a disability
- in the first quarter of 2000, more than 5 million Americans joined the online world
- there are about 55,000 new users each day.

The rate of computer usage and Internet access for those with disabilities is about half that of those without disabilities, according to NCD.

2. A New Freedom

In June, 2001, President Bush announced the implementation of new regulations that direct federal agencies to make technology available to assist roughly 120,000 disabled federal workers. President Bush also announced what the White House called a ***"New Freedom"*** initiative, an \$8.6 billion plan to help disabled Americans get access to innovative technologies that could help them at work, at school or in their communities.

The "New Freedom Initiative" is composed of the following key components:

Increasing Access to Assistive and Universally Designed Technologies:

- Federal Investment in Assistive Technology Research and Development. The Administration will provide a major increase in the Rehabilitative Engineering

Research Centers' budget for assistive technologies, create a new fund to help bring assistive technologies to market, and better coordinate the Federal effort in prioritizing immediate assistive and universally designed technology needs in the disability community.

- **Access to Assistive Technology.** Assistive technology is often prohibitively expensive. In order to increase access, funding for low-interest loan programs to purchase assistive technologies will increase significantly.

Expanding Educational Opportunities for Americans with Disabilities:

- **Increase Funding for the Individuals with Disabilities Education Act (IDEA).** In return for participating in a new system of flexibility and accountability in the use of Federal education funds, states will receive an increase in IDEA funds for education at the local level and help in meeting the special needs of students with disabilities.
- **Focus on Reading in Early Grades.** States that establish a comprehensive reading program for students, including those with disabilities, from preschool through second grade will be eligible for grants under President Bush's Reading First and Early Reading First Initiatives.
- **Integrating Americans with Disabilities into the Workforce:**
- **Expanding Telecommuting.** The Administration will provide Federal matching funds to states to guarantee low-interest loans for individuals with disabilities to purchase computers and other equipment necessary to telework from home. In addition, legislation will be proposed to make a company's contribution of computer and Internet access for home use by employees with disabilities a tax-free benefit.
- **Swift Implementation of "Ticket to Work."** President Bush has committed to sign an order that directs the federal agency to swiftly implement the law giving Americans with disabilities the ability to choose their own support services and maintain their health benefits when they return to work.
- **Full Enforcement of the Americans with Disabilities Act (ADA).** Technical assistance will be provided to promote ADA compliance and to help small businesses hire more people with disabilities. The Administration will also promote the Disabled Access Credit, an incentive program created in 1990 to assist small businesses comply with the Act.
- **Innovative Transportation Solutions.** Accessible transportation can be a particularly difficult barrier for Americans with disabilities entering the workforce. Funding will be provided for 10 pilot programs that use innovative approaches to developing transportation plans that serve people with disabilities. The Administration will also establish a competitive matching grant program to

promote access to alternative methods of transportation through community-based and other providers.

Promoting Full Access to Community Life:

- Promote Homeownership for People with Disabilities. Congress recently passed the “American Homeownership and Economic Opportunity Act of 2000,” which will permit recipients with disabilities to use up to a year’s worth of vouchers to finance the down payment on a home. The Administration will work to swiftly implement the recently enacted law.
- Swift Implementation of the Olmstead Decision. President Bush has committed to sign an order supporting the most integrated community-based settings for individuals with disabilities, in accordance with the Olmstead decision.
- National Commission on Mental Health. President Bush has committed to create a National Commission on Mental Health, which will study and make recommendations for improving America’s mental health service delivery system, including making recommendations on the availability and delivery of new treatments and technologies for individuals with severe mental illness.
- Improving Access. Federal matching funds will be provided annually to increase the accessibility of organizations that are currently exempt from Title III of the ADA, such as churches, mosques, synagogues, and civic organizations. The Administration also supports improving access to polling places and ballot secrecy for people with disabilities.

3. International Scenario

Case Study from India

Prof Alex (Sandy) Pentland, Academic Head of MIT Media Lab, says the next IT Accessibility Revolution will come from India. Media Lab Asia is working with Government of India, State Government of Uttaranchal and Integrated Systems Society to provide a new model of Wireline/Wireless Info-Kiosks for Accessibility, Tele-Medicine and Education for Remote Communities of Hilly Terrain of Uttaranchal, new State formed in India.

Idea and Concept The hilly terrain of Uttaranchal makes it very difficult to have fully wireline technologies throughout the entire new state formed recently in northern India. While creation of infrastructure at lightening speed, with a mix of OFC and VSAT/Wireless networks is a high priority for the remote areas, it is the development of Distance Learning Technologies and Accessibility for communities of Hilly Terrain, Adult Education and posting of information of Board and Universities along with Tele-

Medicine facilities for mutual referral and consultations or follow-ups with doctors located distantly which is equally important to be able to utilize the infrastructure gainfully and provide relief to such folk. While it is not feasible to provide a terminal in every house, the idea is to have, ideally, two Info-Kiosks in each village, with multiple terminals, for minimum Accessibility using Wireless Technology. Bringing such Info-Kiosks to the rural community with additional information on the Agriculture Sector, an essential component for the rural community would accelerate E-Commerce Readiness for Citizen Access in this new State.

In India, the concept of manned long-distance telephone booths has been commonly used because of the telecommunication problems. With add-ons of Internet connectivity and Info Display VDUs, the Info-Kiosks would use a number of technology components. The application would utilize Bi-Lingual and Multi-lingual Content Management Systems with Voice Output, using Unicode and integrated with **Peer-to-Peer Technology** so that need for expensive server computers is eliminated and thus form a Citizen-to-Citizen interface. The Info-Kiosks would be strengthened by a Quality Management Program on ISO9001 to benefit the remote Little Communities in terms of Quality Management and help the Small and Medium Enterprise in understanding and accepting International Quality Standards.

Impact A major impact will be to provide Access Benefits to the Little Rural and Remote Communities of Uttaranchal which have been bereft of IT skills and usage so far. The Info-Kiosks with multiple terminals will directly improve the Literacy of the Area, providing better IT skills and improve the medical counseling support much needed in the hilly and remote areas. This technology would also bring Internet exposure to the young children of the areas who would then take lead in introducing practical use of these technologies to other remotely connected members of the communities, thus having a multiplying effect.

A. What are the Accessibility Issues?

Some of the 508 accessibility standards issued by the Access Board recently:

- Interactive electronic forms must be made available to people with disabilities. But with current technology, interaction between forms and screen readers can be unpredictable, the Access Board said.
- Accessibility could cost the federal government more than \$1 billion a year—about a 3 percent increase in the \$38 billion the government now spends annually on information technology.

- At \$510 million a year, accessible software will cost agencies more than accessible hardware, priced at \$337 million.
- "Back office" equipment, such as servers and telecommunications switches typically used only by service personnel, is exempt.
- A delay in implementation of the standards sought by members of the information technology industry was denied.
- Companies are encouraged to try to meet accessibility requirements in innovative ways as technology evolves.

Accessibility issues go way beyond Web site content and presentation and likely will have an impact on us in the near future. Those matters include:

- Changing speech to text for hearing-impaired users.
- Using a standard protocol to operate cell phones, a photocopier or other devices that could be connected to and operated from a computer.
- Enabling at-home teleconferencing with connections to office machines.
- Controlling a computer via speech commands.

Making accessibility improvements expand opportunities for everyone by helping users to quickly locate the information they're seeking: The home page organizes information, text is reduced to links and the page loads quickly because JavaScript and pictures are eliminated. The page is direct, to the point and easy to navigate no matter what browser is being used.

Particularly, users of wireless data services, through their WAP phones or PDAs, are not very impressed by the current offerings of web site content. Limited access to an even more limited content supply makes this kind of browsing very frustrating. The demand for a better and more complete solution is rising. This demand is being addressed by time and cost intensive manual conversion on a site-by-site basis. Alternatively, inadequate and incomplete automatic format translation methodologies are being applied. This results in practically useless information, no graphics, and for

most sites obscure error messages. How can the existing content be made available with its richness to all of the different devices without any compromises?

To be accessible, with one solution, the Wireless Carrier operator should break through the current limitations on the content, and open its subscriber base to the full richness of the web. For example, the technology from World Cruiser™ solution provides a service that is up and running in minutes, where the data subscribers can go to any desktop URL and follow the links to navigate across the whole web. Out-of-the-box support for graphics, forms, and links using the World Cruiser from MobileWebSurf or such a product would make the browsing experience seamless. Other technologies, such as voice recognition and video, are being integrated to increase the quality and richness of user experience and another similar product, the Websphere Transcoding Publisher (WTP) from IBM plugs-in to a Translation Server for national language translations. These kinds of products use a sophisticated new technology that can intelligently transform existing web sites on-the-fly to be viewed and effectively navigated on any mobile device and can also provide dynamic, device specific content preparation based on a set of pre-defined and user defined intelligent transformations. In addition to general transformation, it should also be possible to have site-specific transformation for accessibility as well as device-specific transformation information for mobility. Based on this information the *end user can freely browse all sites, anywhere, on all devices, at all times, without any changes to the original content.*

For such applications, the server should be designed to work with the Wireless Carrier's existing equipment. The subscriber's URL request could be transmitted from the device to the Gateway. The servers handle the request, and do the appropriate transformation for the requesting device and the Wireless Carrier's existing WAP content could continue to be delivered unmodified. The accessibility server then presents itself as an augmentation to existing services.

A Customization Tool is required to apply customized transforms to augment or optimize the transformed content. Site owners may want to customize their site since users accessing information on a mobile device may be of a different category type (employees versus general citizens for instance). Or enterprises may feel that a

particular application is more important or often accessed by mobile users and so should be more prominent in the transformation process. A Graphical User Interface (GUI) should allow web content to be reordered, hidden, or displayed more prominently by applying easy to use rule sets. These rules should allow for optimizing a site transformation for all scenarios.

Accessibility is teaching Web designers to review the value of everything on a site that does not provide or link to related information. Bouncing balls, items fading in and out, moving lines, and other bells and whistles are distracting nuisances. They add little information, require space that can be put to better use, and are often difficult to explain or justify in terms of accessibility. We're all better served without them.

B. Future Trends

Accessible Web pages containing information that has been organized, pleasantly presented, has text reduced to hyperlinks, is direct, easily navigated and loads quickly.

Buy Accessible

Buy Accessible represents a partnership between industry and government to assist in the implementation of Section 508. Buy Accessible consists of three parts: 1) a database where vendors can provide links to both their products and their 508 accessibility information as supplied on a template; 2) a database for assistive technology vendors to have a single site to list their products; and 3) a search engine to allow government purchasers to do market research into the products they are attempting to buy to ensure they select those that are the most accessible.

Multi-lingual Content

Some of the State Agencies already provide pages in Spanish and at least one is planning to experiment with a Perl script, coupled with their own

Java-Scriptlink, to allow visitors to their web site to seamlessly convert any page to Spanish using an online machine translator. They are planning to use one of the following free online translators:

<http://www.paralink.com/translation>

<http://www.teletranslator.com> (Part of Gist-in-time)

Content Management

An important aspect for this is the Globalization Content Management which refers to applications that are specifically focused on providing multilingual content management for Internet and business applications in an Extranet environment, as seen from the IntraOffice suite, from TerraSpan, a new generation of Web-based enterprise application software.

Access control is the mechanism by which users are permitted to various operations or data within a system according to their identity and associated privileges. As the user selects and accesses protected resources, web servers verify session status with Session Management Services. If the session is active, the server will pass any application-specific data to the source.

Telematics

Within five years, the computer components used in automotive telematics will likely rival what is in the desktop computer today. Automotive Telematics Systems will allow delivery of sophisticated communications, including Internet access, information and entertainment on demand, Email, and interaction with websites. A good example of an accessibility tool is MobileWebSurf's WorldCruiser TM gateway which is source,

platform, and device independent, allowing content to be integrated with a variety of dashboard and handheld devices.

Outreach

On the Road to Accessibility, outreach efforts are directed toward making affected audiences aware of the requirements of Section 508 and the available opportunities for training and information sharing. Key projects include displays and seminars at major information technology conferences and other events. A "speakers bureau" (link to a request form for a speaker to be developed) of subject matter experts in accessibility offers individually tailored presentations and programs to meet the needs of target audiences. Publicizing the issues, progress, and available resources are key elements of the 508 outreach program.

Resource Management

Wireless Internet solutions for resource management or use with those who cannot read a terminal or who cannot use a computer, or who are on the move and have only tele/cell phone access is going to become very important. With the multitude of standards and device configurations, development and maintenance of content is a nightmare to content providers and wireless carriers wishing to extend their content for access to end users. Resource Management will improve as there is an improvement to user experience due to user interface, reducing current loss of information in the mobile provisioning process that has resulted in low wireless data use so far.

VI. References

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2. <http://www.fcw.com/fcw/articles/2001/0625/news-508-06-25-01.asp>
3. The NGA e-Gov toolkit is available at <http://www.nga.org/center/egovernment>
4. Title II of the ADA <http://www.usdoj.gov/crt/ada/t2hlt95.htm>
5. The NCD report "The Accessible Future" is available at <http://www.ncd.gov/newsroom/publications/accessiblefuture.html>
6. Integrated Systems Society White Paper on Wireline/Wireless Info-Kiosks for Accessibility

VII. Appendix

Web Accessibility checklist, based on Section 508:

1. Do web pages have a text equivalent for every non-text element (e.g., via "alt", "longdesc", or in element content)?
2. Do multimedia presentations have equivalent alternatives synchronized with the presentation?
3. Are web pages designed so that all information conveyed with color is also available without color?
4. Are documents organized so they are readable without requiring an associated style sheet?
5. Are redundant text links provided for each active region of a server-side image map?

6. Are client-side image maps provided instead of server-side image maps except where the regions cannot be defined with an available geometric shape?
7. Are row and column headers identified for data tables?
8. Do tables use markup to associate data cells and header cells for data tables that have two or more logical levels of row or column headers?
9. If frames are used, are they titled with text that facilitates frame identification and navigation?
10. Are web pages designed to avoid causing the screen to flicker with a frequency greater than 2 Hz and lower than 55 Hz?
11. Is a text-only page, with equivalent information or functionality, provided to make a website accessible, when compliance cannot be accomplished in any other way? Is the content of the text-only page updated whenever the primary page changes?
12. If web pages utilize scripting languages to display content, or to create interface elements, is the information provided by the script identified with functional text that can be read by assistive technology?
13. If a web page requires that an applet, plug-in or other application be present on the client system to interpret page content, does the page provide a link to the plug-in or applet?
14. If electronic forms are designed to be completed on-line, does the form allow people using assistive technology to access the information, field elements, and functionality required for completion and submission of the form, including all directions and cues?

15. Is a method provided that permits users to skip repetitive navigation links?
16. If a timed response is required, is the user alerted and given sufficient time to indicate more time is required?
17. Are web pages designed to work on older versions of browsers?