

Accessibility of Information Technology Report

Disability
Services

Computer Accommodations Program (CAP)
A collaboration between
Disability Services and the
Office of Information Technology
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Executive Summary

The University of Minnesota is a leader in creating and ensuring access for people with disabilities and fostering the understanding that access benefits all members of the community, not just people with disabilities. Over the past six years, principles of Universal Design, which focus on ensuring usability and access for the widest range of users, have begun to be infused throughout the institution. In the information technology environment, the most significant step was the implementation of the University's Accessibility of Information Technology (AIT) policy and accompanying standards in March 2002.

Since the implementation of this policy, the University has experienced successes in removing barriers in the information technology environment. Much of this was supported through awareness and training provided by the Computer Accommodations Program (CAP), which is a partnership between Disability Services (DS) and Academic and Distributed Computing Services (ADCS). These efforts have led to system-wide accessibility improvements of University Web pages and service delivery.

In addition, ADCS and DS are establishing a more proactive approach to the accessibility of WebCT and other applications by increasing collaboration and expanding participation in management-level ADCS meetings to include staff from CAP.

Accessibility Challenges

As a state and federally funded education institution, an employer and a place of public accommodation, the University of Minnesota is required to provide equitable opportunities, benefits, and programs for people with disabilities.¹ While guidelines exist in the information technology community for creating accessible software, internet pages, internet programs and other electronically transmitted information², these guidelines are not uniformly applied nor do they provide specific guidance to ensure access for all users.

The cost to the University of Minnesota for inaccessible information technology products is real, particularly over the long-term. If information technology is not accessible, the institution must provide equitable access to students and employees. The University of Minnesota has

¹ See, Americans with Disabilities Act, Rehabilitation Act of 1973 and the Minnesota Human Rights Act.

² For example, the World Wide Web Consortium guidelines (WC3) or the Web Content Accessibility Guidelines (WCAG).

experienced this issue with some major software purchases in recent years. They include: PeopleSoft, WebCT, WebVISTA and Macromedia. In many cases, on-line forms, an inescapable activity for all students, staff and faculty, have also been inaccessible.

Recommendations

Creating a truly accessible learning and working environment at the University of Minnesota calls for commitment and planning. Disability Services recommends the following strategies:

- Broadly promote and reward accessible Web site design;
- Hold third party vendors accountable for creating accessible software, hardware, and Web-based applications;
- Ensure the accessibility of on-line forms;
- Respond to Student Use of Accessible Computing Environments;
- Establish a model accessibility compliance program for information technology, and
- Develop an accessibility-testing laboratory for software developers.

Conclusion

Only by improving the infrastructure that allows individuals to acquire, process and share information in a flexible manner that accommodates the variety of talents, learning styles and abilities of all members of the campus and research community can the University of Minnesota truly achieve greatness.

I. Introduction

In May 2005, the University of Minnesota Faculty Senate Disabilities Issues Committee requested a report from Disability Services regarding the accessibility of information technology environments. The inquiry was prompted by questions from a student representative about access to Web-based learning technology.

In requesting this report, the Committee recognized the importance of building accessible, universally designed information technology environments, particularly because of the increasing centrality of information technology to learning and working at the University. In addition, proactive measures to address these issues ensure that the University avoids the need for costly retroactive fixes similar to those the University has had to make to the physical (bricks and mortar) environment constructed at the University during its first 125 years.

This report gives a broad perspective on the successes and barriers to ensuring full access to the information technology environments at the University of Minnesota. It also includes recommendations that will continue to improve accessibility for all users.

II. Forces Driving The Need for Accessibility

The prevalence of disability in our communities requires the University to “stay ahead of the curve” to ensure the accessibility of information technology. The number of people with disabilities in our University and national community is growing. The number of students with disabilities registered with DS since the late 1990s to the present has grown steadily. Currently, the University has approximately 1,000 students registered with DS and over 350 employees actively using DS’ return-to-work and accommodation services.³

Nationally, the U.S. Census Bureau reports 49.7 million people age 5 and over in the civilian, non-institutionalized population with at least one disability, a ratio of nearly 1-in-5 U.S. residents, or 19 percent. Forty-six (46) percent of U.S. residents report having more than one disability. Sixty (60) percent or 10.4 million working-age men with disabilities are employed. Fifty-one (51) percent or 8.2 million working-age women with disabilities are employed. There are 1.9 million people ages 18 to 34 who have disabilities and are enrolled in school. They

³ See, Disability Services Annual Report, 2003-2004.

comprise 12 percent of all students in this age group. The majority of this group (1.4 million) attend college or graduate school⁴.

III. The University's Commitment to Access & Universal Design

The University of Minnesota is a leader in creating and ensuring access for people with disabilities and fostering the understanding that access benefits all members of the community, not just people with disabilities. Over the past six years, principles of Universal Design, which focus on ensuring usability and access for the widest range of users, have begun to be infused throughout the institution. For example, faculty have integrated Universal Instructional Design in the creation of their syllabi, courses and Web instruction⁵; Facilities Management has adopted principles of Universal Design in the University's building standards⁶; and some service units have received training on universally designed service delivery.

In March 2002, the University of Minnesota adopted the Accessibility of Information Technology (AIT) policy and standards⁷, which was developed by the Office of Policy and Process Development, the Office of Information Technology, Disability Services, and the Computer Accommodations Program, in collaboration with members of the University community. During this process, this group solicited feedback from stakeholders system-wide to ensure that the policy was achievable and consistent with the University's commitment to ensuring access to all students and employees. This policy was used as the basis for development of a Web accessibility policy and standards at the University of Oregon.⁸

The Computer Accommodations Program (CAP) strengthens the capacity of the University to support the implementation of the policy, including education, training and technical support. Key to its success is the partnership between the Office of Information Technology's ADCS and DS. Staff positions are funded by both offices, and CAP leadership participates in meetings in

⁴ U.S. Census Report, 2000. "Facts for Features" US Census Press Releases - http://www.census.gov/Press-Release/www/releases/archives/facts_for_features/001616.html.

⁵ See, e.g., Curriculum Transformation And Disability (CTAD), a grant partnership between General College and Disability Services that was funded by U.S. Department of Education (Project #P333A990015) to provide strategies for universal instructional design to faculty.

⁶ See, e.g., Program Information Requirements at <http://www.cppm.umn.edu/standards.html>.

⁷ This policy, available at <http://www.fpd.finop.umn.edu/groups/ppd/documents/policy/webaccesspol.cfm>, was recognized as a leading example of policies encouraging access to information technology in higher education by DO-IT at the University of Washington. See, DO-IT Center, University of Washington, <http://www.washington.edu/doi/>.

⁸ See, DO-IT Center, University of Washington, <http://www.washington.edu/doi/>.

ADCS to ensure that knowledge is shared and opportunities to ensure access are considered early in the decision making, development, and implementation process.

IV. Successes in Implementing AIT Policy

A. Promotion and Education

Knowledge is the key to breaking down barriers. CAP provides opportunities for education and awareness throughout the University community. Below are examples of its activities:

1. Short Course Offerings

CAP increases the awareness and knowledge about accessible Web site design through two ADCS short-course offerings. A 1.5-hour accessible Web design seminar helps participants to gain an understanding of how to design an accessible Web site and raises awareness of issues regarding access to the World Wide Web for persons with disabilities. A 3-hour Accessible Web Site Design workshop expands on the material presented in the seminar by providing hands-on training and practice with the JAWS screen-reader and on-line accessibility evaluation utilities, as well as an opportunity for developers to explore their own sites and ask detailed questions. The seminar and the workshop are offered once each semester and during the Summer session. The seminar is free, with a short-course registration fee for the workshop.

2. Web Accessibility Resource CD

A “Web Accessibility Resource CD” was developed by Phil Kragens as part of the materials for the Web accessibility short-courses. The resource CD has been distributed to:

- Participants in a full-day tutorial, entitled “Know Thy Disabilities: Beyond Checklist Standards and Automated Tools for Evaluating the Web,” presented at the Usability Professionals Association (UPA) International Conference in Montreal during the last week of June 2005;
- Participants in the first CIC accessibility conference, held at the University of Illinois, Urbana/Champaign, on July 21 and 22, 2005;
- Individuals requesting copies — an announcement was included in the ForUM Communicators, July 2005, and
- Participants in an informal “table topic” session during the CIC Tech Forum on September 13, 2005.

In August 2005, Academic and Distributed Computing Services (ADCS) and the Digital Media Center (DMC) began distributing the Web Accessibility Resource CD to faculty and staff receiving Web authoring training and consulting. Although the CD is but one small piece in improving Web and electronic information technology accessibility, it is an excellent tool and a symbol of the University of Minnesota's commitment to full inclusion and participation by students, employees, visitors and members of the community with disabilities.

3. Increasing Accessibility Knowledge and Awareness

The Computer Accommodations Program will be working with staff from both Web Development and the Learning Technologies Units (LTU) in the College of Continuing Education (CCE) on Web accessibility training. On August 25, 2005, Alice delaCova, Information Technology Manager, and six staff members from Web Development and Usability Testing received training in the evaluation and designing of Web pages and applications for accessibility. Eleven to thirteen members of the LTU staff will go through a similar process, with the focus on distance/electronic learning and learning module evaluation/development. These partners are an important part of moving accessibility forward at the University of Minnesota.

B. System-wide Accessibility Improvements

Since the effective date of March 2002, the Accessibility of Information Technology (AIT) Policy and Standards — in combination with education, training and awareness building — have led to system-wide accessibility improvements of University Web pages and service delivery. Many University departments and programs incorporate accessibility in their processes and the design and construction of their Web sites and applications.

1. Web Development staff ensure that enterprise applications development and testing result in usable and accessible applications.
2. University Relations includes accessibility features and practices in the University Web template and documentation.
3. The Office of Information Technology (OIT), ADCS, and the DMC educate their staff, faculty and other members of the University community about accessible application and Web design.

4. Purchasing Services has raised the accessibility awareness of its staff, including Buyers, and makes accessibility language part of its Requests for Proposals, Requests for Bids, and other contracts.

C. Increased Coordination Between DS and ADCS

Due to recent experiences with the conversion from WebCT to WebCT VISTA, the partnership and cooperation between ADCS and DS has been strengthened to ensure a more proactive approach to accessibility to WebCT and other applications.

Steps are being taken to increase communication, awareness and problem-solving capacity related to accessibility issues and concerns, including WebCT and other information technology applications and services. Phil Kragnes, Adaptive Technology Specialist for CAP, participates in the ADCS management team meetings at least once a month. In addition, CAP will work with WebCT management team members on accessibility issues and attend WebCT support meetings at least once a month.

V. Accessibility Challenges

Although much has been accomplished — with awareness, acceptance and adoption continuing to grow — challenges still remain.

A. Promotion and Awareness

While promotion and awareness are part of the success story of the AIT policy, they also remain a challenge. To truly achieve accessibility throughout the University's information technology environments, students, staff and faculty creating Web pages, forms and documents must be aware of accessibility requirements. In addition, managers and administrators at all levels must be exposed to adaptive technologies and Web accessibility issues. They must also assist with promoting access by encouraging their staff to ensure access to information technology. In addition, students must be aware of these standards and training, and awareness must reach them early in their experience at the University.

B. Purchasing Accessible Software Products

As a state and federally funded education institution, an employer and a place of public accommodation, the University of Minnesota is required to provide equitable opportunities, benefits and programs for people with disabilities.⁹ While guidelines exist in the information technology community for creating accessible software, internet pages, internet applications and other electronically transmitted information¹⁰, these guidelines are not uniformly applied nor do they provide specific guidance to ensure access for all users.¹¹ Aside from Section 508 of the Rehabilitation Act of 1973, which requires federal and state governments to procure and use accessible information technology, there are no legally mandated minimum standards or requirements for creating or selling accessible information technology products.

In contrast, purchasers may have legal obligations to ensure access as state government entities, employers or places of public accommodations. For this reason, producers of information technology products are motivated to make representations regarding accessibility.¹² Our experience with representations made by manufacturers has revealed little understanding of the difference between complying with standards and functional accessibility, which is necessary to ensure that information technology environments are accessible.

The cost to the University of Minnesota for inaccessible information technology is real, particularly over the long-term. If applications are not accessible, the institution must provide equitable access to students and employees. Such costs usually involve providing access assistants to students or employees, sign language interpreters, captioning services or

⁹ See, Americans with Disabilities Act, Rehabilitation Act of 1973 and the Minnesota Human Rights Act.

¹⁰ For example, the World Wide Web Consortium guidelines (WC3) or the Web Content Accessibility Guidelines (WCAG).

¹¹ See, University of Minnesota Computer Accommodations Program Web site for technical guidance provided to ensure access. This service is provided to the University of Minnesota stakeholders to ensure that specific types of access are provided for different types of users, e.g., users of screen-readers, people who cannot access audio information, etc.

¹² For example, manufacturers make claims such as “our product is ADA [Americans with Disabilities Act] compliant”; “our product complies with Section 508 [Rehabilitation Act of 1973]”; “we follow W3C Web accessibility guidelines; or simply claim that “our product is accessible.”

other similar types of accommodations. These costs are repeated each time a person with a disability interacts with an application.

The University of Minnesota has experienced this issue with some major information technology purchases in recent years. They include:

1. PeopleSoft – While the PeopleSoft’s human resources program allows screen readers to “read” screens from top to bottom, our experience is that users who use screen readers cannot “interact” with the program, including entering or retrieving data.¹³
2. WebCT – The University recently planned a complete conversion to WebCT VISTA from its previous edition, Classroom Edition (CE). This process had to be modified due to significant problems with the interface/layout, programming/scripting, and format/controls in WebCT VISTA.¹⁴
3. Macromedia – Not all elements of presentation programs are accessible. For example, our experience has shown that flash movie buttons are the only element of flash presentations that can be made accessible to a screen-reader; the Breeze Live application is completely inaccessible to screen-reader and speech-recognition users.

Although the barriers to accessibility are dramatic — even show stopping — in the three instances described, the University of Minnesota and other institutions of higher learning are working with PeopleSoft and WebCT to improve the accessibility of those products. We have had less success with establishing a cooperative relationship with Macromedia to achieve progress in improving access. It is hoped that the recent acquisition of Macromedia by Adobe Systems may be beneficial in identifying and resolving accessibility issues and barriers in Macromedia applications.

C. Ensuring Access to On-Line Forms

Completing forms is an inescapable activity for all students, faculty and staff at the University of Minnesota. Many forms are available online in a variety of formats: MS Word, Rich Text format, Adobe PDF and HTML. Although the accessibility of many HTML forms at the University is fairly good and improving, downloadable forms have been given little if any attention.

¹³ PeopleSoft has made claims that their product is Section 508 and WCAG compliant.

¹⁴ The company claimed that their products are Section 508 compliant and have been tested for accessibility.

In many cases, efforts have been made to offer documents and forms in “accessible” formats — MS Word, Rich Text Format, Text Only. However, like a poorly designed HTML page, poor design and layout will make the content of any document or form inaccessible to users of screen-readers and other adaptive technologies. Adobe Portable Document Format (PDF) documents and forms can be very accessible, when careful planning and use of the Adobe Accessibility Wizard are part of the file creation process. Information about form fields, form controls, and other document elements can be included in the document and accessed by adaptive technology.

D. Access to Electronic Formats of Printed Materials

Currently, the Document Conversion Unit of Disability Services is required to scan print materials to create electronic files for use with adaptive applications for students, faculty and staff with disabilities. In 2002-2003 alone, the Document Conversion unit converted over 80,000 pages to electronic format.¹⁵ Such accommodation services are duplicative when publishers already have electronic files of the print materials and could make them available to educational institutions.

E. Student Use of Accessible Computing Facilities

In Spring 2002, Walter Library renovations were completed and ADCS opened a student computing facility in room 103 on the ground floor of the library. This location was the first at the University of Minnesota to include adaptive technology workstations in a general student-computing lab. Similarly, the renovation of Coffman Memorial Union was completed in the Fall of 2002, and another ADCS student computing facility with adaptive technology workstations was opened in room B60. Wilson Library and Elliott Hall adaptive technology labs contain adaptive computing equipment only.

¹⁵ See, Disability Services Annual Report, 2003-2004.

VI. Recommendations

Creating a truly accessible learning and working environment at the University of Minnesota calls for continued commitment and planning. The following are strategies recommended by Disability Services to ensure that the University remains faithful to its commitment of providing accessible information technology environments for all students, faculty and staff.

A. Broadly Promote And Reward Accessible Web Site Design And Use

The University, in partnership with administration, faculty and staff, must seize the opportunity to raise awareness and instill accessibility as a standard operating principle in the minds of our current and future students, teachers, employers and professionals. This can be done by:

1. Making accessibility part of the academic experience at the University of Minnesota:
 - a) Include instruction and the discussion of accessibility in all relevant courses.
 - b) Include accessibility in the assessment of relevant course projects.
 - c) Recognize outstanding student achievements that embrace and promote accessibility.
 - d) Encourage the President and other top-level administrators to publicly support information technology accessibility throughout the community on a regular basis.

2. Promoting and widely distributing the Web Accessibility Resource CD as follows:
 - a) Include with the ADCS “Welcome Kits.”
 - b) Include in course materials for Web design, authoring and management-related classes.
 - c) Distribute at new student and new employee orientations.
 - d) Advertise on OIT, ADCS, DMC and other University technology-related Web sites — The CD is featured on the Technology Enhanced Learning (TEL) Web site for August-September 2005. <http://www.umn.edu/tel/>.

3. Engaging the University community to build commitment to accessible information technology:
 - a) Make written and verbal public statements promoting accessible Web design.
 - b) Establish system-wide procedures for reporting Web accessibility issues.
 - c) Recognize outstanding examples of accessible Web pages and services.
 - d) Encourage all Web sites to include an “Accessibility Statement,” such as:

“The University of Minnesota is committed to ensuring that all individuals have access to information technology associated with administration and services, courses of instruction, departmental programs, and University-sponsored activities. The Accessibility of Information Technology policy and standards, including Web page design standards, are available at <http://cap.umn.edu/ait/>.”

B. Hold Third Party Vendors Accountable for Creating Accessible Software, Hardware, Web-based Applications and Print Media

The University has a legal obligation to ensure that all enterprise systems are accessible to students, faculty and staff with disabilities. To meet this obligation, it must have mechanisms and procedures for integrating accessibility considerations in application development, acquisition and conversion on a system-wide basis. Purchasing Services should be a key component of such a strategy, making accessibility a critical factor in contract language and acquisition decisions.

The University needs short- and long-term strategies to ensure that vendors produce accessible products. These range from leveraging the University’s buying power, combined with its partners in the CIC, to emphasize inclusion of accessibility features to implementing small, obtainable steps immediately. Among the key components to improving the accessibility of third-party applications are:

1. Include strong contract language regarding accessibility together with strong articulation of the University’s obligations under accessibility-related policies, standards and state and federal laws.
2. Additional and regular accessibility training for University purchasing staff and other decision makers.
3. Provide accessibility feedback and training to vendors and developers.
4. Call for federal (and if necessary, state) legislation requiring producers of software and Web-based applications to ensure accessibility for users of adaptive technology products and users with various sensory disabilities. The University of Minnesota should seek to achieve this in partnership with CIC institutions.
5. Support efforts to pass legislation mandating publishers to make available electronic versions of print media for purposes of providing access for users of adaptive technology.

C. Ensure The Accessibility Of On-Line Forms

Given the staggering number and diversity of forms at the University of Minnesota, it is essential that a process for addressing the accessibility of forms for both student and employee use be initiated immediately. This process should:

1. Identify the most frequently used forms and documents within units and system-wide;
2. Assess forms and documents for accessibility;
3. Ensure that embedded formats (i.e., MSAA metadata) are appropriate;
4. Test compatibility with adaptive technology (e.g., screen-readers, screen-magnifiers, and speech-recognition);
5. Require accessibility repair — to be completed by the original form creator/author using the Adobe Accessibility Wizard, and
6. Re-assess modified forms or documents for accessibility.

Although the learning process and the modification of existing PDF forms will require staff time and other potential expenditures, the cost may be offset by the reduction in the lost productivity of other staff who would otherwise be needed to assist co-workers with disabilities in completing forms. A system-wide effort is needed to ensure that University documents and forms are accessible by students, employees and members of the public with disabilities.

D. Respond to Student Use of Accessible Computing Environments

OIT and DS, in consultation with students, need to examine future models that are responsive to student use and needs for accessible computing environments. A study, driven by student feedback, should be developed to understand student use patterns and potential new ideas for providing greater access to adaptive computing facilities. From that, short- and long-term strategies for computing labs for students need to be identified.

E. Capture A Revenue Opportunity: Accessibility Testing for Product Developers

Claims and determination of accessibility must not be the domain of vendors and University purchasers alone. A mechanism for user testing and evaluation by students, employees, and members of the community with disabilities should be established.

Many companies, such as PeopleSoft and WebCT, have a strong desire and financial incentive to ensure the accessibility of their products. Vast, complex and sometimes contradictory information on accessibility leaves product developers perplexed and overwhelmed.

Compounding the situation is the lack of accessibility versus compliance testing sites/services. The University of Minnesota can seize on the opportunity to become the foremost authority on accessibility and provider of accessibility testing/evaluation services. The University of Minnesota possesses many strengths that can be leveraged to form a preeminent accessibility research and testing/evaluation center — Web Development and Usability Testing, Academic and Distributed Computing Services, Mechanical Engineering, Computer Science and Electrical Engineering, Disability Services and the Computer Accommodations Program.

F. Establish a Model Accessibility Compliance Program for Information Technology

While we hope that developers will make Web pages and services accessible simply because it is "the right thing to do," the reality is, in the ever-changing information technology environment, different strategies need to be employed to achieve full accessibility. Any compliance program must be combined with a strong education and promotion program. It must also address consequences of failing to comply with the AIT Policy. And, it must have an enforcement mechanism that is cost effective.

VII. Conclusion

The process to make the University of Minnesota one of the top academic research institutions in the world has begun. Recruiting and retaining diverse and talented students and employees is an essential part of this strategic positioning process. Only by improving the infrastructure that allows individuals to acquire, process and share information in a flexible manner that accommodates the variety of talents, learning styles and abilities of all members of the campus and research community can the University of Minnesota truly achieve greatness.