Preliminary Report of the Study on Accessibility Concepts in Computer Science, Information Systems and Information Technology Programs in Higher Education

Preliminary Report of the Legislative Workgroup on Accessibility Concepts in Computer Science, Information Systems and Information Technology Programs in Higher Education, Maryland Department of Disabilities

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Introduction
Chapter 503 of Maryland House Bill 396 (2014) calls on the Department of Disabilities to convene a workgroup consisting of academic faculty with expertise in accessibility concepts, individuals with disabilities and disability policy experts to study instruction on accessibility concepts in computer science, information systems and information technology programs in higher education in the state of Maryland.

As part of its analysis, the workgroup is to assist the Department of Disabilities in compiling information on and identifying gaps in current course offerings for accessibility to information technology in computer science, information systems and information technology higher education programs in the state of Maryland; determine what is needed to close any gaps; and make any needed recommendations.

About This Preliminary Report
As called on in Chapter 503 of House Bill 396 Section 1(d)(1), the workgroup, acting on behalf of the Maryland Department of Disabilities, offers this preliminary report of findings and recommendations. A final report will follow on or about June 30, 2017, as called for in Section 1(d)(2).

This report begins by discussing reasons that a review of present teaching of accessibility concepts in the higher education institutions of Maryland at this time is necessary. It is widely recognized that access to the World Wide Web and other information technology formats is essential for basic living in today’s world. When developers of these technologies lack knowledge of or interest in accessibility concepts, people with disabilities are greatly limited and even barred from accomplishing necessary life tasks. In response to the truly significant barriers resulting from a lack of access services made available through information technologies, a variety of laws and standards are coming to place greater responsibilities on government and business to provide access to these services for people with disabilities.

The workgroup has identified top-level categories of accessibility concepts that should be included in computer science, information science, and information technology programs and has performed a preliminary evaluation of the degree to which such topics are addressed in Maryland higher education institutions. We conclude that although Maryland is among the leaders in this area, such coverage is modest at present, with greater focus necessary to meet the upcoming needs of government, business, and others. We are pleased that we can offer in this report examples from Maryland that serve as best practices in the teaching of accessibility concepts. We expect that the attention given to these concepts from this preliminary report, from outreach to institutions during the 18 months of further evaluation prior to the final report, from further research, and from concurrent national initiatives along similar lines will help lead to more teaching of accessibility concepts in Maryland’s institutions of higher education, even before delivery of the final report.
Finally, we include a draft of a planned survey that will help us collect further information about how and where accessibility concepts are currently taught, which we expect will encourage educators to add such instruction to their curriculum. We caution that this survey is a draft and has not yet been distributed to instructors of Computer Science, Information Systems and Information Technology. Following submission of this preliminary report, the workgroup plans to post this survey via web-based survey tools and contact institutions of higher education throughout Maryland to encourage participation. The survey results will be incorporated in the final report and are expected to inform many of the recommendations contained in that report.

**The Need for Accessibility**

House Bill 396 defines accessibility as, “fully and equally accessible to and independently usable by individuals with disabilities so that they are able to acquire the same information, engage in the same interactions, and enjoy the same services as users without disabilities, with substantially equivalent ease of use.” (See House Bill 396, Chapter 503, Section 1(c)(1).)

An individual with a disability is defined by the Americans with Disabilities Act as someone with “a physical or mental impairment that substantially limits one or more major life activities of such [an] individual,” a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment. Major life activities as defined in the act include but are not limited to “caring for oneself, performing manual tasks, seeing, hearing, eating, sleeping, walking, standing, lifting, bending, speaking, breathing, learning, reading, concentrating, thinking, communicating, and working.”

Provision of innumerable services available to us through information technologies is something Marylanders largely take for granted. Banking, shopping, application for services and benefits, research, and many other “major life activities” are achieved through use of such technology. Use of information technology for these services adds convenience to the lives of those who are able to do so, but, increasingly, it is also becoming the case that there are no effective alternative means to access many of these services.

People with disabilities are fully able to use computers and mobile devices with the use of specialized hardware and/or software. However, use by individuals with disabilities also often requires developers to use accessibility concepts in development of web sites and mobile applications. Unfortunately, there are far too many instances when these concepts are not employed, thereby denying access to the services provided by the sites to those with disabilities.

**An Evolving Legal Environment**

In answer to the emergence of the World Wide Web and the denial of critical services to people with disabilities, a variety of legal responses have developed and these continue to evolve. Websites of the federal government were the first to gain coverage under regulation as Section 508 of the Rehabilitation Act of 1973 (as amended), which became applicable with issuance of the Section 508 Standards in 2000.

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In subsequent years, several states, including Maryland, enacted legislation modeled on Section 508. These standards, known as Regulatory Standards COMAR 14.33.02.01-12, became applicable to most of Maryland state government in 2005. Maryland primarily adopted the federal standards by reference, making them applicable to those agencies of state government covered by the Regulatory Standards. The Access-Board, the small federal agency responsible for the Section 508 standards, is in the extremely protracted process of refreshing these standards. The final standards are expected in October 2016, and until there is a final rule, the standards from 2000 are applicable to the federal government and to Maryland government. Once a final federal rule becomes applicable, there will be considerable changes required by the federal and state governments as the present rule has served over 15 years despite considerable change in technology over that time.

For states without web accessibility legislation and local government web sites, coverage has come more slowly. The Americans with Disabilities Act of 1990 (ADA) provides the broadest coverage in support of access by people with disabilities to a vast range of goods and services provided by state and local governments, places of public accommodations and transportation providers. The unquestionable congressional intent of the law favors broad coverage, but passage occurred shortly before the internet, so no mention of it appears. Aggrieved individuals with disabilities have asserted that the ADA covers inaccessible web sites, but the federal circuit courts charged with making this determination are divided. At its simplest, the argument against the ADA covering web sites is that it clearly speaks of places of public accommodations, which web sites are not. Conversely, a travel agency shop is named in the ADA, but it is most rare that anyone buys an airline ticket by going to a standalone travel agency. Yet the web sites we all use instead would not be covered if we strictly apply the need for a place. Many purveyors of services aggressively steer traffic to their web sites or mobile apps, making other means of contact inefficient or even impossible.

The United States Department of Justice (DOJ) has enforcement responsibilities under the ADA. The Department of Justice has begun a regulatory process, with the following statement regarding how website accessibility under Title II of the act applies to state and local governments:

The Internet as it is known today did not exist when Congress enacted the ADA, yet today the Internet plays a critical role in the daily personal, professional, civic, and business life of Americans. The ADA’s expansive nondiscrimination mandate reaches goods and services provided by public accommodations and public entities using Internet web sites. Being unable to access web sites puts individuals at a great disadvantage in today’s society, which is driven by a dynamic electronic marketplace and unprecedented access to information. For individuals with disabilities who experience barriers to their ability to travel or to leave their homes, the Internet may be their only way to access certain government programs and services. In this regard, the Internet is dramatically changing the way that governmental entities serve the public. Public entities are increasingly providing their constituents access to government services and programs through their web sites. Information available on the Internet has become a gateway
to education and participation in many other public programs and activities. Through Government web sites, the public can obtain information or correspond with local officials without having to wait in line or be placed on hold. They can also pay fines, apply for benefits, renew State-issued identification, register to vote, file taxes, request copies of vital records, and complete numerous other everyday tasks. The availability of these services and information online not only makes life easier for the public but also often enables governmental entities to operate more efficiently and at a lower cost.

The ADA’s promise to provide an equal opportunity for individuals with disabilities to participate in and benefit from all aspects of American civic and economic life will be achieved in today’s technologically advanced society only if it is clear to State and local governments that their web sites must be accessible. Consequently, the Department is planning to amend its regulation implementing title II of the ADA to require public entities that provide services, programs or activities to the public through Internet web sites to make their sites accessible to and usable by individuals with disabilities. (Department of Justice Fall Statement of Regulatory Priorities, http://www.reginfo.gov/public/jsp/eAgenda/StaticContent/201510/Statement_1100.html)

A Notice of Proposed Rule Making appears likely in January 2016 with the period for comments coming to an end in April and a final rule to follow.

Regulations by the DOJ for Title III of the ADA applicable to public accommodations face substantial delay. Along with the regulations for state and local governments, the department announced its intent with an Advance Notice of Proposed Rule Making in 2010. In its November 2015 Statement of Regulatory Priorities, the department indicates that it expects to have a final rule in 2018. (See Department of Justice Fall Statement of Regulatory Priorities.)

The absence of final regulations and uncertainty about the date when they will in fact be established should not be understood to indicate a lack of coverage of information technology and web accessibility under Title III of the ADA. The U.S. DOJ has actively pursued claims and achieved settlements for a lack of web accessibility. The National Association of the Deaf filed a case against Netflix for a failure to caption streaming video on its service, and the Department of Justice agreed in a Statement of Interest filed in 2012.(See http://www.ada.gov/briefs/netflix_SOI.pdf.) In a clear indication of its position about web access, the department states, “The fact that the regulatory process is not yet complete does not support any inference whatsoever that web-based services are not already covered by the ADA, or should not be covered by the ADA.” (Id P. 12) In 2014, the department entered into a Consent Decree with H&R Block, the national tax filing service, requiring web access of its web-based and mobile apps.(See the H&R Block Consent Decree at http://www.ada.gov/hrb-cd.htm.)

2 In light of the earlier discussion in this report regarding places of accommodations, it is notable that Netflix is an exclusively web-based movie streaming service, which indicates that the Department of Justice does not believe a physical location is necessary in order to require web accessibility under the Americans with Disabilities Act. 3 H&R Block, unlike Netflix, has local places of public accommodation where individuals with disabilities can acquire its services. These places of accommodation are never suggested as an acceptable accommodation by the plaintiff or the Department of Justice in its intervention. The department states that the inaccessibility of the H&R
Business may elect not to address web accessibility, but as the above paragraphs demonstrate, this is a most risky gamble. A blog post offered by business defense firm Seyfarth Shaw, LLP states regarding the DOJ regulator delay, “DOJ’s delay in issuing public accommodations website regulations perpetuates the murky waters businesses must navigate, with no regulatory guidance about what the law requires of them…. We have seen plaintiff’s lawyers initiated a virtual tsunami of demand letters and lawsuits against all manner of businesses (e.g., retailers, hotels, banks) alleging that their websites are not accessible to claimants with disabilities.” (Id.) (See Lexology, Justice Department delays web accessibility regulations for at least three more years, leaving businesses in turmoil. http://www.lexology.com/library/detail.aspx?g=726fc466-cd34-4b3a-bf9f-a156bd9c17fb.)

Key Accessibility Concepts for Higher Education Instruction

Leaders in teaching accessibility in information technology realize what should also be clear to readers of this report, which is that to provide an accessible web experience as they may be and eventually will be required to offer, they need a workforce with the knowledge in what this report calls accessibility concepts. As the Teaching Accessibility web site states, “All technology companies that have worked on accessibility have faced a similar challenge of preparing designers, engineers and researchers to think and build inclusively. Similarly, academic programs in design, engineering and HCI are seeking ways to better prepare students to address the needs of diverse populations. Given this shared challenge, industry, academia and advocacy have now come together to create models for teaching and training students of technology to create accessible experiences. (See Teaching Accessibility web site at http://teachingaccessibility.com/.)

Even a brief review of the web site indicates that members are information technology leaders in addition to top academic institutions who provide the professionals to work in the technology industry. Note that the University of Maryland System (USM) is a member institution. Awareness is taking shape in higher education, in part driven by the expressed needs of the industry that accessibility concepts must be made available to future students in the technology sciences.

Effective instruction in accessibility concepts for students in computer science, information systems, and information technology programs should, as a minimum, include coverage of the following areas:

- Exploration of the range of disabilities that can impact access to information technology, and the specific types of issues that arise in connection to these disabilities
- Legal requirements and standards with respect to providing access to information technology
- Exposure to relevant research related to disabilities and access to information technology (e.g., research on interface designs that are problematic for users with specific disabilities and why)
- Practice in applying workable solutions to achieve accessibility for a wide range of information technology situations

Block web site “prevents people with disabilities from independently preparing and filing taxes online, downloading tax preparation software, finding tax professionals, obtaining information from the website’s blog, obtaining information from instructional videos, obtaining a ‘Second Look’ review of previous years’ taxes, and having taxes prepared in real time by a tax preparer via the ‘Block Live’ function.”
• Strategies for how practitioners can stay current with new research and best practices for accessibility after graduation

More specifics about how these areas should be covered in different courses and programs is a question that will be addressed in more detail in the final report.

Training of students in higher education pursuing Computer Science, Information Systems and Information Technology should extend beyond navigating the confusing calculus to assess risks regarding whether a business or government concern will be dragged into a disability-related lawsuit. Rather, when carried out effectively, such instruction represents an asset for decision makers and practitioners who understand the advantages of providing an accessible web experience for their customers and clients. By encouraging higher education institutions in the state of Maryland to provide such instruction as part of their degree programs, we enhance their future professional opportunities, thereby improving the experience of disabled individuals who will be affected by their future work.

Current State of Instruction in Accessibility Concepts in Maryland Higher Education

At present, higher education instructors rarely teach accessibility concepts to their students. Rather, professionals typically gain knowledge in this area either because it is required for their positions or because they develop an interest in the subject over the course of their careers. Teaching accessibility concepts to Maryland higher education students will improve on the status quo by building a cadre of men and women capable of providing necessary abilities to Maryland government and industry.

The legislation requires the workgroup to “compile existing information on and identify any gaps in the current course offerings for accessibility to information technologies in institutions of higher education in the State.” (See chapter 503 Section 1 (c)(2).) This section of the report presents preliminary findings related to this question.

The workgroup expresses its gratitude to the Office of the Chancellor of the USM for sharing with us information collected from the 16 schools constituting the USM regarding their efforts in accessibility, including but extending beyond information technology accessibility as discussed in and defined by this report.

Based on the USM report and on additional evidence available to the workgroup, approximately 25% of the USM Schools offer some courses teaching accessibility concepts to students of Computer Science, Information Systems, and Information Technology at the undergraduate and/or graduate levels. However, we do not infer that 25% of the students enrolled in these programs in fact receive that exposure. Schools in the report that reported such instruction are Towson University (TU), University of Maryland College Park (UMCP), and University of Maryland University College (UMUC).

Based on information in the USM report, the greatest number of relevant undergraduate courses appears to be offered by TU. The iSchool at UMCP offers a vast array of graduate level courses that teach accessibility concepts and offers interested students research opportunities to explore these concepts in undergraduate and graduate settings. UMUC offers graduate courses that appear to expose
students to accessibility concepts. In addition, UMUC offers two undergraduate psychology courses with assignments requiring “students to use a screen reader and turn off their monitors so that they can experience what a visually impaired person has to go through just to access basic information on the Internet.” (See Accessibility file, Complete.)

The workgroup is aware of additional instruction within the USM relating to accessibility concepts. More specifically, Bowie State University, University of Baltimore, and University of Maryland Baltimore County all offer relevant courses with those available from the latter two institutions being particularly notable.

At the writing of this report, the workgroup does not believe that teaching of accessibility concepts occurs at a greater degree at Maryland independent colleges. If anything, it seems likely there is less such instruction in Maryland’s independent colleges. It also seems highly likely that there is little if any teaching of accessibility concepts to students in Maryland community colleges, in part because such concepts usually are taught (if taught at all) in upper-level undergraduate courses, and often not until graduate school. In light of this information and these assumptions, we conclude that a large majority of Maryland students in computer science, information systems, and information technology programs do not receive meaningful instruction in accessibility concepts.

The workgroup plans to gather additional information about current accessibility instruction through a survey of faculty members teaching computer science, information systems, and information technology in higher education institutions throughout Maryland. A preliminary draft of the survey is attached to this report as an Appendix.

**Closing the Accessibility Concept Gap**

Based on information collected so far, the workgroup’s current thinking is that legislative proposals and costly initiatives may not be needed. Rather, we expect that our engagement with institutions throughout the state and the continuing effort of groups, including Teaching Accessibility, will as a natural side-effect bring greater awareness of the need for more instruction in this area for students of Computer Science, Information Systems and Information Technology. We also anticipate that recommendations of the workgroup in the final report will provide added guidance to teachers and institutions in addressing this critical area.

Members of the workgroup agree that accessibility concepts must be introduced to students in core courses for their major in the disciplines of Computer Science, Information Systems, and Information Technology. A commitment to offer these concepts in at least one mandatory course to all students would considerably enhance the exposure most students receive. An example of what this might include is provided by Towson, where “All undergraduate students in both the Information Systems and Information Technology majors learn how to use a screen reader and perform an accessibility inspection on a web page, as part of the CIS 435: Human-Computer Interaction class, which is a required class.”(See Accessibility File, Complete.)
Plans for the Final Report
As noted above, Chapter 503, House Bill 396 calls on the Department of Disabilities to submit a final report on or about June 30, 2017. (See Section 1(d)(2).) The final report will address in detail the following topics:

- Report findings from the survey of instructors about accessibility concepts currently being taught in Maryland higher education programs. This data will lend support to assumptions made in the present report or aid the workgroup in altering these assumptions for the final report.
- Provide detailed recommendations about accessibility concepts that should be taught in computer science, information systems, and information technology programs. This will be included in the final report but also should be shared with instructors in the form of a roadmap to aid them in incorporating accessibility concepts into their instruction.
- Describe implications for state policy (if any) and recommend further actions for the Department of Disabilities going forward in order to address this issue. A web site through the Department of Disabilities to function as a repository of ideas and resources is also contemplated, and this workgroup may remain in place to facilitate sharing of accessibility concepts throughout state institutions of higher education. Data available to the workgroup from the survey may suggest additional policy proposals, which we would include in the final report.

On behalf of the participants in the workgroup, it is a privilege to offer this report. We look forward to gathering the data necessary for the final report and submitting it in June 2017. If readers have questions or comments about the information provided in this report, expectations for the next report submitted here or other related matters, please contact Jim McCarthy at imccarthy@mdtap.org or 410-554-9245.
Appendix 1. Workgroup Participant Biographies

Jim McCarthy is Executive Director of the Maryland Technology Assistance Program within the Maryland Department of Disabilities. He has twenty years’ experience in disability public policy including accessible technology and information. Jim served on the Telecommunications and Electronic and Information Technology Advisory Committee (TEITAC) created by the Access Board as a part of the ongoing update to Section 508, the provision requiring purchase and development by the federal government of accessible electronic and information technology. Accessible electronic voting and access to instructional materials in elementary, secondary and post-secondary education have also been focus areas.

John Brennan, Deputy Assistant Secretary, Maryland Department of Disabilities. Mr. Brennan has over 15 years’ experience in the disability field with a focus on disability policy and programs. He worked at the National Federation of the Blind prior to joining the MD Department of Disabilities in 2003.

Gabe Cazares is a Government Affairs Specialist for the National Federation of the Blind. As a recent college graduate, Gabe understands first-hand the problems inaccessible technology poses to blind and otherwise print disabled individuals at institutions of higher education. Gabe earned a bachelor’s degree in political science with a Spanish minor from Texas State University in May, 2015.

Dr. Amy Hurst is an accessibility researcher and an assistant professor in the Information Systems department at the University of Maryland Baltimore County (UMBC) where she founded the prototyping and design lab (the pad). She received her PhD in Human-Computer Interaction at Carnegie Mellon in 2010. Her research interests are centered around empowerment, and most of her projects explore engaging people with disabilities in the DIY / Maker movement and building software that automatically adapts to user needs. She has significant experience working with individuals with diverse cognitive, motor, and sensory impairments.

While at UMBC, Dr. Hurst created a graduate level assistive technology and accessibility class that is taught in the Human-Centered computing program. This class provides students an introduction to the design, development and evaluation of a range of assistive technologies and an understanding of common accessibility challenges with technology. In this course, students engage in accessibility research and practice through reading relevant literature and listening to guest speakers from the local community. Students will apply this knowledge in a research project where they design, implement, and/or evaluate an assistive technology.

Paul T. Jaeger, Ph.D., J.D., is Professor, Diversity Officer, and Director of the Master of Library Science (MLS) program of the College of Information Studies and Co-Director of the Information Policy and Access Center (iPAC) at the University of Maryland. He has been engaged in education, research, and activism related to accessibility for more than 15 years. His research and teaching focus on human rights and social justice issues in information, with a particular emphasis on disability and accessibility.
In 2014, he received the Library Journal/ALISE Excellence in Education Award, the International Educator of the Year award for the field of Library and Information Science. At the University of Maryland’s iSchool, Dr. Jaeger established the Diversity and Inclusion program and all of the courses in the program, which include several that are partly or wholly focused on issues of disability and accessibility.

He is also founder and chair of the Conference on Inclusion and Diversity in Library and Information Science (CIDLIS).

Dr. Jaeger is the author of more than one hundred and fifty journal articles and book chapters, as well as fourteen books – many of which focus on topics of disability and accessibility. His recent books include *Disability and the Internet: Confronting a Digital Divide* (Lynne Rienner, 2012); *Libraries, Human Rights, and Social Justice: Enabling Access and Promoting Inclusion* (Rowman and Littlefield, 2015); and *Accessibility for Persons with Disabilities and the Inclusive Future of Libraries* (Emerald, forthcoming). His research has been funded by the Institute of Museum & Library Services, the National Science Foundation, the American Library Association, the Smithsonian Institution, and the Bill & Melinda Gates Foundation, among others. Dr. Jaeger is Editor of *Library Quarterly*, Co-Editor of the *International Journal of Information, Diversity, and Inclusion*, and Co-Editor of *Advances in Librarianship*.

**Dr. Jonathan Lazar** is a Professor of Computer and Information Sciences and Director of the Undergraduate Program in Information Systems at Towson University. Dr. Lazar also founded the Universal Usability Laboratory at Towson University and served as director from 2003-2014. Dr. Lazar is involved in teaching and research in the area of human-computer interaction, specifically, Web usability, Web accessibility for people with disabilities, user-centered design methods, assistive technology, and public policy in the area of human-computer interaction. He has previously published 8 books, including “*Research Methods in Human-Computer Interaction*” (2010, John Wiley and Sons), “*Universal Usability: Designing Computer Interfaces for Diverse User Populations*” (2007, John Wiley and Sons), and “*Web Usability: A User-Centered Design Approach*” (2006, Addison-Wesley). His newest book, titled "Ensuring Digital Accessibility Through Process and Policy," co-authored with Dan Goldstein and Anne Taylor, was published in June 2015 by Morgan Kaufmann Publishers (an imprint of Elsevier).

Dr. Lazar has also published over 130 refereed articles in journals, conference proceedings, and edited books. Dr. Lazar currently serves on the executive board of the Friends of the Maryland Library for the Blind and Physically Handicapped, and from 2010-2015, served on the Executive Committee of ACM SIGCHI (Computer-Human Interaction) as the chair of public policy. Dr. Lazar was named winner of the 2015 AccessComputing Capacity Building Award, the 2011 University System of Maryland Regents Award for Public Service, the 2010 Dr. Jacob Bolotin Award from the National Federation of the Blind, and the 2009 Outstanding Faculty Award in the Fisher College of Science and Mathematics at Towson University. Dr. Lazar has been granted two US patents for his work on creating accessible web-based security features. During the 2012-2013 academic year, Dr. Lazar was selected as the Shutzer Fellow at the Radcliffe Institute for Advanced Study at Harvard University, to investigate the relationship between human-computer interaction for people with disabilities and US Disability Rights Law.
Lori Markland has worked for the Maryland Technology Assistance Program (MDTAP) since 2001. Lori serves as the Director of Communications, Outreach, and Program Development for MDTAP, currently managing all program data, program communications (all social media platforms and print publications) and community outreach. In addition, Lori has managed multiple grant projects under MDTAP including a 5-year accessible information technology project focused on teaching education institutions and state agencies why and how to implement Section 508 as well as overseeing Voice for Freedom, a grant-funded turned sustainable project that provides communication devices to non-speaking nursing facility residents. Lori has spearheaded and coordinated a number of additional projects and initiatives related to assistive technology and information technology accessibility.

Amy Mason divides her time as an Access Technology Specialist at the National Federation of the Blind Jernigan Institute between web accessibility assessments, product evaluations, and fielding a wide variety of access technology questions. Her considerable expertise in document and book accessibility has fueled the team’s work with publishers, educators and content creators. Amy has written a number of articles and resources on these topics for the National Federation of the Blind’s flagship publication, the Braille Monitor, as well as for the team’s Access Technology Blog. She is also an experienced trainer and has used her previous experience as an access technology trainer at NFB events and as a presenter at conferences.

Kathryn Summers, Ph.D., has devoted her career to understanding how to design and write for people with lower literacy skills, older adults, and people who speak English as a second language. Her work focuses on health literacy, forms design, accessibility, and access to information and online services of all kinds. She believes that plain language and plain interaction can make it easier for everyone to accomplish their goals.

Recently, her work on design for low literacy shaped the design of the Anywhere Ballot and led to a report for the National Institute of Standards and Technology (NIST) on best practices for designing electronic voting interactions. She has also evaluated voting systems and web applications for usability and accessibility for the Maryland Department of Elections and the Department of Justice. At the University of Baltimore, she directs graduate programs in interaction design and information architecture and supervises the University’s User Research and Eye Tracking Lab.
Appendix 2. DRAFT of the Survey

1. What is your faculty status: (choose only one)
   - Graduate assistant
   - Adjunct
   - Lecturer
   - Tenure-track, untenured
   - Tenure-track, tenured
   - Administrator

2. What types of information technology courses does your university offer:
   (check all that apply)
   - Computer science, undergraduate
   - Computer science, graduate
   - Information systems, undergraduate
   - Information systems, graduate
   - Information technology, undergraduate
   - Information technology, graduate
   - Information sciences, undergraduate
   - Information sciences, graduate
   - Other ________________________

3. Is the topic of technology accessibility covered in any required information technology classes?
   a. If so, how many classes?

   [[Branch and loop to the following questions based on how many classes are entered]]

   b. What is the class title?
   c. In what academic program are students required to take this class?
   d. Is the class graduate or undergraduate? (checkboxes)
   e. How frequently is this class taught? (checkboxes for every semester, once a year, once every two years, other)
   f. Does the class have a lecture about accessibility, a unit about accessibility, or is it entirely about accessibility? (checkboxes)
g. Tell us about the accessibility content of the class (check all that apply)

- Does the class discuss technical standards such as Web Content Accessibility Guidelines?
- Does the class discuss laws related to technology accessibility, such as Section 508 of the Rehabilitation Act, the Americans with Disabilities Act, or the Communications and Video Accessibility Act?
- Does the class discuss the legal definition of disability, and the range of possible accommodations that might be needed to provide full access?
- Does the class provide demonstrations of any assistive technologies or allow students to use assistive technologies?
- Does the class provide opportunities for students to interact with people with disabilities?
- Does the class provide simulations of having a disability?
- Does the class provide any other disability-related experiences? (large textbox)

h. Please provide a URL for any online course materials (i.e., slides, syllabus, or class projects): (large textbox)

4. Is the topic of technology accessibility covered in any elective information technology classes?
   a. If so, how many?

   [[Branch and loop to the following questions based on how many classes are entered]]

   b. What is the class title?
   c. In what academic program are students required to take this class?
   d. Is the class graduate or undergraduate? (checkboxes)
   e. How frequently is this class taught? (checkboxes for every semester, once a year, once every two years, other)
   f. Does the class have a lecture about accessibility, a unit about accessibility, or is it entirely about accessibility? (checkboxes)
   g. Tell us about the accessibility content of the class (check all that apply)
Does the class discuss technical standards such as Web Content Accessibility Guidelines?
Does the class discuss laws related to technology accessibility, such as Section 508 of the Rehabilitation Act, the Americans with Disabilities Act, or the Communications and Video Accessibility Act?
Does the class discuss the legal definition of disability, and the range of possible accommodations that might be needed to provide full access?
Does the class provide demonstrations of any assistive technologies or allow students to use assistive technologies?
Does the class provide opportunities for students to interact with people with disabilities?
Does the class provide simulations of having a disability?
Does the class provide any other disability-related experiences? (large textbox)

h. Please provide a URL for any online course materials (i.e., slides, syllabus, or class projects): (large textbox)

5. Do you perceive that your efforts to teach accessibility are viewed favorably by (check all that apply):
- Fellow faculty members
- Department administration
- University administration
- Campus IT
- None of these above

6. Have your efforts to include accessibility in your courses been supported with (check all that apply):
- Course buy-outs
- Funding
- GA or TA support
- Support from campus IT
- None of the above