

MCCA  
GLOBAL TEC  
FORUM

## **Including the “Invisible” Minority:**

**How Tech Can Assist Blind and Low-Vision Professionals  
Lead the Way**

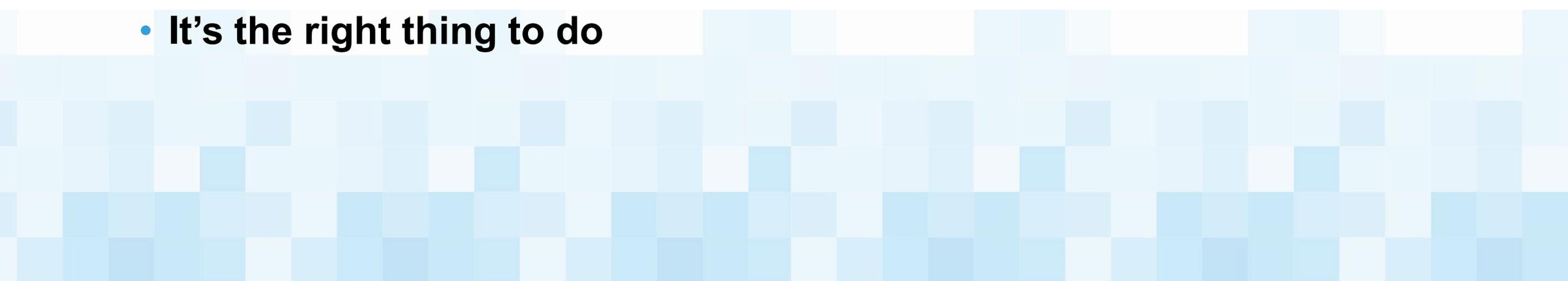
# Our Panel:

- **Louie Castoria, Moderator** – Partner, Kaufman Dolowich & Voluck, LLP
- **Timothy Elder** – Principal Attorney, TRE Legal Practice
- **Karae Lisle** – Chief Executive Officer, Vista Center for the Blind and Visually Impaired
- **Neil Wilcox** – Senior Vice President & General Counsel, Enterprise Shared Services, USAA



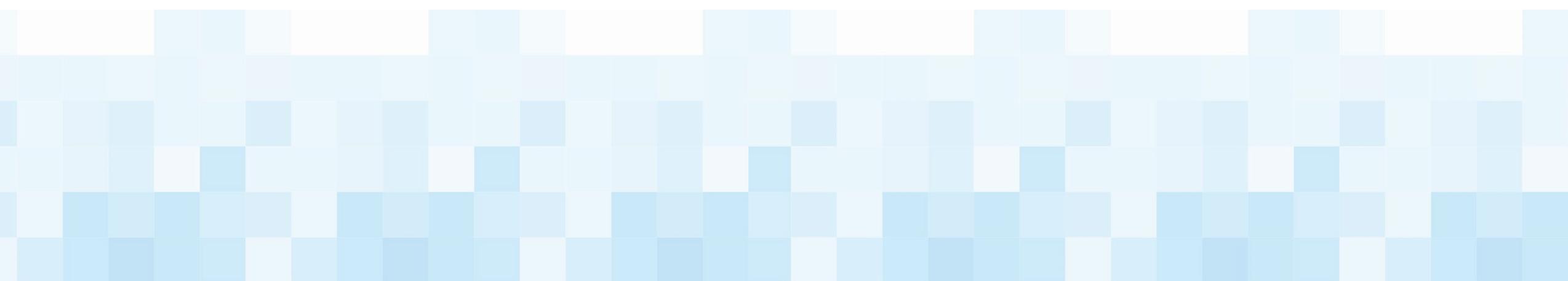
# Including the “Invisible” Minority

**Why corporate counsel need to be concerned:**

- **Compliance with laws like the Americans with Disabilities Act (ADA) and state anti-discrimination laws**
  - **Compliance with obligations in government contracts**
  - **Avoiding expensive lawsuits that can create negative publicity**
  - **In the long run, it saves money**
  - **It's the right thing to do**
- 

# The Statistics

## **ABA 2011 Study, currently being updated**

- **Job opportunities**
  - **Compensation**
  - **Advancement**
  - **Other factors**
- 

# What's it really like?

## Panelists perspectives:

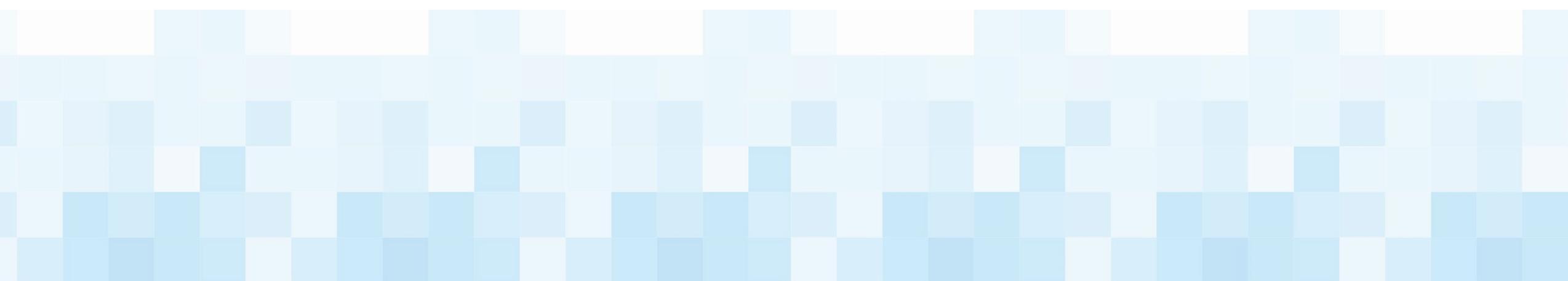
**Our Panelists' experiences: barriers, struggles, and triumphs**



# Lawsuits? What lawsuits?

- **Target**
  - **CNN**
  - **Air BNB: website accessibility and denial of service**
  - **Greyhound: website accessibility**
  - **Uber: denial of service**
  - **County of San Mateo: voting rights**
- 

# Compliance Issues:

- **ADA regulations on workplace accessibility**
  - **Typical government contract language**
- 

# **Assistive Technology: Now and Then**



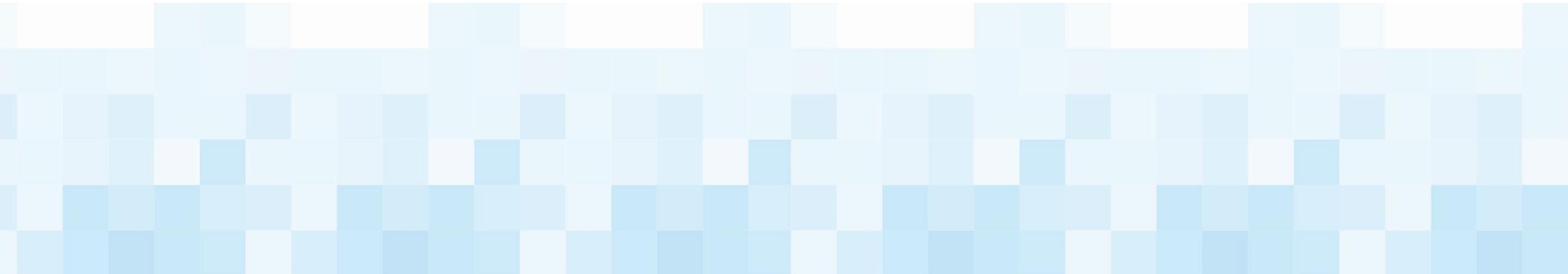
# **Software Accessibility: Now and Then**



**Why it's more efficient to act now.**



**Why it's the right thing to do.**



# Take-aways





# Your Questions and Comments



**THANK YOU!**

# ABA DISABILITY STATISTICS REPORT

-2011-

*A compilation of statistics on individuals and  
lawyers with disabilities, their employment, and  
the legal profession.*



*The following is extracted from the ABA Commission on Mental and Physical Disability Law's 2011 Goal III Report.*

## **I. Summary**

The American Bar Association, through its Commission on Mental and Physical Disability Law, issues a collection of information regarding statistics on individuals and lawyers with disabilities, their employment, and the legal profession. For 2011, the Commission reports the following highlights:

- ❖ National statistics show that attitudinal and economic barriers for individuals with disabilities lead to extremely low employment rates and salaries, especially when compared to individuals without disabilities. The current economic crisis exacerbates the low rate of employment of individuals with disabilities, including lawyers.
- ❖ The ABA reports that approximately 6.87% of its members identify themselves as having a disability.
- ❖ The percentage (3.4%) and number (5,292) of the 157,598 law students at ABA-accredited law schools who requested accommodations has increased slightly from last year (3.2% and 4,941 respectively), demonstrating a slow but steady increase in these numbers over the past few years.

- ❖ The number of lawyers who hold leadership positions in ABA entities increased marginally from 31 for 2009-2010 to 32 this year.
- ❖ Forty-one percent of ABA entities report having a lawyer with a disability in a leadership position, a slight decrease increase from 44% in 2009-2010, no chairs or chairs-elect have a disability, however.

## **II. Introduction**

The American Bar Association (ABA) was founded in 1878 by 100 lawyers from 21 states. Today, the ABA has over 400,000 members making it the largest voluntary professional association in the world. The ABA provides law school accreditation, continuing legal education (CLE), information about the law, programs to assist lawyers and judges, and initiatives to improve the legal system for the public. The ABA's primary mission is "[t]o serve equally our members, our profession and the public by defending liberty and delivering justice as the national representative of the legal profession."

To help carry out this mission, the ABA established Goal III: "[t]o eliminate bias and enhance diversity." An objective of Goal III is to "[p]romote full and equal participation in the association, our profession, and the justice system by all persons." The tenets of Goal III were drawn from its predecessor, former ABA Goal IX, which was "to promote full and equal participation in the legal profession by minorities, women, persons with

disabilities, and persons of differing sexual orientations and gender identities." This 2011 report on the status of lawyers with disabilities within the ABA and its entities is an effort to advance Goal III and its ideals.

Stemming from the ABA's long history of promoting reform of the justice system, the ABA established in 1973 the Commission on the Mentally Disabled to focus on the advocacy needs of people with mental disabilities. After the passage of the Americans with Disabilities Act of 1990, the Commission broadened its mission to serve all people with disabilities, and therefore changed its name to the Commission on Mental and Physical Disability Law (Commission). The Commission's mission is to "promote the ABA's commitment to justice and the rule of law for persons with mental, physical, and sensory disabilities and their full and equal participation in the legal profession."

The Commission is composed of lawyers and other legal professionals, many of whom have disabilities, are experts in the field of disability law, or have experience in assisting individuals with disabilities. These members serve on several committees (see Section VIII.A). For example, the Committee on Lawyers with Disabilities focuses on issues of importance to those who may have a disability in the legal community. The Commission's Committee on ABA Goal III prepared this report. Through these committees and other programs, the Commission is the only entity within the ABA—and the legal profession—that has a comprehensive

focus on all lawyers and law students with disabilities on a national level.

### III. THE STATUS OF AMERICANS WITH DISABILITIES

This section estimates the number of people with disabilities in the United States, in the workplace, and in the legal profession.

#### A. PEOPLE WITH DISABILITIES IN THE UNITED STATES

According to the most recent and comprehensive data from the U.S. Census Bureau (USCB), in 2005, 54.4 million Americans reported having a disability—nearly one in five (19%)—with 6.5 million reporting a severe disability. Using the most recent 2008 data from the USCB, the American Community Survey (ACS),<sup>1</sup> Cornell University's Rehabilitation Research and Training Center on Disability Demographics and Statistics (Center) reported 12.9% of the U.S. population over the age of five as having a disability, with the largest represented type of disability being an "ambulatory disability" (6.9%).

It has been frequently stated that people with disabilities constitute America's largest minority group.<sup>2</sup>

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<sup>1</sup> The American Community Survey is a relatively new tool developed by the USCB. It is an interim report for the decennial census, has a much smaller survey population, and provides timelier pictures of the American population.

<sup>2</sup> See e.g., National Organization on Disability ([http://www.nod.org/news/harris\\_interactive\\_survey\\_largest\\_minority\\_group\\_falls\\_behind\\_in\\_companies/](http://www.nod.org/news/harris_interactive_survey_largest_minority_group_falls_behind_in_companies/))

#### B. PEOPLE WITH DISABILITIES IN THE WORKPLACE

##### i. Recent figures

Recent statistics and surveys that reveal attitudinal barriers in society regarding the employment of persons with disabilities help explain the small number of lawyers with disabilities who are employed in the legal profession. Based on the most recent 2008 ACS numbers, the Center reported that there were 18,312,900 Americans with disabilities of working age (21 to 64).<sup>3</sup> However, only 39.5% were working, compared to 79.9% for non-disabled persons. This reveals a large employment gap between the disabled and non-disabled of 40.4 percentage points.

The Department of Labor's Bureau of Labor Statistics (BLS)—using data from the Current Population Survey, a monthly sample survey of U.S. households—released a labor force characteristics summary in August 2010 for 2009. BLS stated that that the employment-population ratio was 19.2% among those with a disability and 64.5% for those without a disability. These figures provide an even larger employment gap between the disabled and non-disabled at 45.3 percentage points. BLS reported that 8 out of 10 individuals with disabilities

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<sup>3</sup> The 2009 prevalence rate for individuals with disabilities in the American working population was at 8.4%.

were not in the labor force.<sup>4</sup> compared to 3 out of 10 for those with no disability.<sup>5</sup>

For 2008, the Center reported that for full-time/full-year jobs, 25.4% of working-age persons with disabilities were employed, compared to 60.4% for non-disabled persons. Median annual salaries for disabled workers were 12.5% less than those for non-disabled workers.

Shawn Fremstad of the Center for Economic and Policy Research concluded in September 2009 that "[d]is ability is both a fundamental cause and consequence of income poverty." He reports that (1) around 50% of all working-age adults who experience income poverty have a disability; (2) nearly 66% of adults experiencing long-term income poverty have a disability; and (3) individuals with disabilities experience income poverty more than those in any other single minority, ethnic, or racial group. Fremstad noted that people with disabilities have a more difficult time retaining income for necessities due to the substantial cost associated with having a disability (e.g., extra medical bills, purchasing assistive devices) and that these costs rise as the severity of the disability rises. The Center, citing the ACS, finds the poverty rate for workers with disabilities was significantly higher (25.3%) than the rate for non-disabled workers (9.6%).

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<sup>4</sup> Individuals who are neither employed nor unemployed.

<sup>5</sup> The vast majority of those not in the labor force stated that they do not want a job, yet BLS did not provided reasoning for their desire to remain out of the labor force.

## ii. Attitudes and surveys

When polling individuals with disabilities, a Kessler Foundation/National Organization on Disability (KF/NOD) 2010 survey found that only 21% of those who are of working age (18 to 64) said that they are employed full or part-time, compared to 59% of working age-people with no disability. Seventy-three percent of those who described themselves as unemployed cited their impairment as one of the reasons why they did not have a job. While 43% of all individuals with disabilities claimed that they have encountered some form of job discrimination, this number dropped significantly to 26% when limited to experiences in the past five years.

Studies regarding employer attitudes and activities are also worth noting. A 2010 KF/NOD survey of over 400 American companies found that “[a]lthough corporations recognize that hiring employees with disabilities is important and, for the most part, do not perceive the costs of hiring people with disabilities to be prohibitive, most are not hiring many people with disabilities and few are proactively making efforts to improve the employment environment for them.” The survey found that few companies, 29% of those surveyed, have either a disability diversity-specific policy or program and only 18% of companies offer disability education programming. The costs associated with accommodating an employee with a disability appears to be a non-issue for most employers, as the survey found that 62% of employers believe the costs of hiring a person with a disability is the same as hiring a person without a

disability. The survey concluded that “[t]he reason most employers are doing so little [about disability diversity] is that disability, and the employment of people with disabilities, does not seem to be on their radar.”

The U.S. Department of Labor’s Office of Disability Employment Policy, in a November 2008 report, surveyed a sample of American companies in various industries and of various sizes. The survey found that only 19.1% of the companies surveyed employed individuals with disabilities, and only 13.6% actively recruited people with disabilities. In addition, only 8.7% of the companies surveyed had hired someone with a disability within the past year. Moreover, 72.6% of those companies cited the “nature of work being such that it cannot be effectively performed by a person with a disability,” as a hiring challenge.

## iii. The current economic crisis

The recent—and possibly ongoing—recession has exacerbated problems for individuals with disabilities. While there is much attention and concern over America’s high unemployment rate, which has been hovering around 9%, BLS reported that for 2009 the unemployment rate for individuals with disabilities was at 14.5%. In November 2009, BLS reported an employment-to-population ratio of 18.4% for individuals with disabilities, the lowest percentage since monthly tracking of this figure began in 2008. For the entire year of 2009, that number was only slightly better at 19.2%.

Professor H. Stephen Kaye of the University of California, San Francisco, while using BLS statistics, concluded that there was a direct effect of the recession upon workers with disabilities. He stated that the disproportional effect has resulted in a 9% decline in the presence of workers with disabilities in the employed labor force.

Even worse is that—as purported by Professor Kaye—economic downturns, and the unfortunate conditions they create, have the ability to negatively affect the mental and physical conditions of the workforce, thus resulting in increased disability among labor force participants.

As Joseph Shapiro reported for National Public Radio, during the current job crunch the unemployment rate for those with disabilities is nearly double that of those without disabilities. Moreover, this number may be on the conservative side, because the majority of the current data does not consider how many people with disabilities have given up looking for work and are not in the labor force. Finally, the recession’s effect on state budgets has led to cuts in the areas typically important to those who are unemployed and have a disability, namely vocational training, post-secondary education assistance, and social services.

On the employer side, only 2% of companies surveyed by the KF/NOD reported that in the last three years they had a new hire with a disability.

## C. LAWYERS WITH DISABILITIES IN THE LEGAL PROFESSION

### i. Recent figures

To begin with there is a pipeline problem: individuals with disabilities are less likely to apply and be admitted to law school. As described above, there is a strong disability-poverty correlation. Therefore, many of those with disabilities are not even able to finance law school, let alone sustain the burden of its debt. Moreover, the Center reports that only 12.3% of working-age persons with disabilities held a Bachelor's degree or higher, compared to 30.6% of non-disabled persons, an 18.3 percentage point gap. This education disparity helps explain why so few persons with disabilities become lawyers, as many individuals with disabilities lack the educational background and academic prerequisites to apply to law school.

The ABA conducts an annual census of its lawyer members. According to 2010 figures, 32, 122 of the approximately 383,000 ABA members completed the census questionnaire. Of the 7,731 respondents who answered the query "Do you have a disability?," only 531, or 6.87% answered affirmatively. This number is a slight increase from the 2009 census at 6.76%, but still less than 2007's 7.18%. This percentage is far lower than one would expect given the national statistics on the percentage of Americans with disabilities. Extrapolating this figure to the entire ABA membership, approximately 26,306 members would report having a disability for 2010.

BLS reported that for those who were employed and had a disability in 2009, 0.9% were in the legal profession (e.g., lawyers, judges, magistrates, law clerks, court reporters, paralegals). The number for those who worked in the legal profession in 2009 and did not have a disability was higher at 1.2%. BLS also reported that for the third quarter of 2010 (July, August, and September), 3.2% of those employed in the legal occupation had a disability. This figure is noticeably higher than the 2.6% reported for the third quarter of 2009. Also, Professor Kaye of UC San Francisco, based off of BLS data found that workers with disabilities have a much greater presence in "low-skill" occupations as opposed to "high skill" occupations.

The ABA's Market Research Department collected relevant statistics on lawyers with disabilities for its National Lawyer Population Survey in 2009, but did not ask about disability in 2010 because only 3 of 54 American jurisdictions that license attorneys collected information on lawyers with disabilities. In 2009 Colorado estimated 0.15%, or approximately 29 lawyers, had a disability; Delaware estimated less than 1%, or 25 lawyers; and South Dakota estimated 1%, or 17 lawyers.

The Commission hypothesizes that all of these numbers may be substantially less than the actual number of lawyers with disabilities in the ABA and the profession. Many may choose not to answer the question relating to disability status due to confidentiality concerns, while others may not consider themselves as having a disability.

These low percentages of lawyers with disabilities reflect at least four trends: (1) relatively few college students with disabilities attend law school due to factors ranging from lack of funds to problems with attaining accommodations for the Law School Admissions Test; (2) not everyone with a disability who attends graduates or passes the bar; (3) due to socioeconomic factors and a lack of offered accommodations, it appears that a lower percentage of lawyers with disabilities join the ABA than non-disabled lawyers; and (4) a greater percentage of law school graduates with disabilities do not find employment as lawyers. Ultimately, these figures also reflect the need to have a comprehensive national effort to collect information on lawyers with disabilities.

For 2010-2011, the ABA Section of Legal Education and Admissions to the Bar indicated that of 157,598 law students in ABA-accredited law schools (both J.D. and LL.M students), 5,292 (3.4%) were provided accommodations—up from 4,941 (3.2%) for 2009-2010. Yet despite such increases, it is worth noting that these figures do not reflect an actual estimate or figure as to how many law students in ABA-accredited law schools have a disability.

There has been a small but steady rise in the number of law students with disabilities who request accommodations over the past few years. Although there is a rise in total students enrolled over this period, the percentage of law students who request accommodations has increased as well. The National Association for Law Placement (NALP)

conducts an annual survey and study, entitled *Jobs & J.D.'s: Employment and Salaries of New Law Graduates*, on the employment rates of law graduates by gender, minority, and disability. For the class of 2009, 80.7% of 590 law graduates with disabilities were employed after graduation, compared to 84.4% of 565 law graduates last year, a sharp decrease. Even compared to other groups, graduates with disabilities do not fare well as 89.2% of non-minority law graduates and 84.8% of minority law graduates attained employment. Graduates with disabilities have an employment rate 7.6 percentage points lower than the entire class of 2009.

In the same survey, 9.3% of disabled law graduates indicated that they were unemployed and seeking a job—a noticeable rise from the 8.1% reported for the class of 2008 and 7.4% reported for the class of 2007—compared to 5.8% for all non-minority law graduates and 7.1% for all minority law graduates.<sup>6</sup>

Of the 232 salaries reported by graduates with disabilities, the mean salary was \$84,018 and the median salary was \$62,973. These salaries were considerably lower than the mean and median salaries computed by NALP for men and woman graduates of all races: \$93,454 and \$72,000 respectively (19,513 salaries reported).

These somber statistics led NALP to conclude that: “Graduates with disabilities were less likely to

be employed and, if employed, less likely to obtain jobs in private practice than the class [of 2009] as a whole—and more likely to obtain government and public interest positions.”

There is also concern over retention and promotion of lawyers with disabilities. Even if the small number of lawyers with disabilities who make it into and through law school attain employment, it is necessary to make sure they are afforded the opportunity to remain and prosper at their jobs. Having lawyers with disabilities climb the ranks of their firms or organizations also sends a strong signal to potential employees with disabilities that the legal profession does embrace disability diversity. Yet, as noted by Stephen D. Yslas, general counsel of Northrop Grumman in a *National Law Journal* article, simply hiring from minority groups is not enough. As he stated, “law firms are [already] lagging behind corporate America in making diversity a focal plan of their business plans.” To make sure lawyers with disabilities are accommodated and able to stay with an employer, he suggests that “[d]iversity in law firms and in corporate law departments needs to become an enduring core value attitude and practice that continues long after the current attorney population has moved on.”

## ii. The recent economic crisis and the legal profession

The current economic crisis is still negatively impacting the legal profession. According to the *ABA Journal*, BLS data showed that for November 2010 the legal sector had a second month of job loss with 1,100 fewer jobs. The data also shows that the legal sector has 100 fewer jobs in November 2010 than November 2009. The *National Law Journal* reported in November 2010 that the country’s larger law firms are still cutting jobs with 1,1400 for the past year.

For all law graduates of the class of 2009, NALP reported that the employment rate of new law graduates dropped to 88.3%, the second straight year of decline, after a historical high of 91.9% for the class of 2007. Moreover, NALP concludes that this rate masks a number of weaknesses in the current job market for new graduates, including “higher rates of part-time and temporary employment, the fact that several thousand graduates had their law firm job start dates deferred beyond the usual fall timeframe, and the fact that one in five employed graduates was seeking different employment.”

## D. DISABILITY DIVERSITY IN THE LEGAL PROFESSION

In recent years, ABA presidents have made disability diversity a priority. Past ABA President Michael S. Greco (2006-2007) hosted the First National Conference on Employing Lawyers with Disabilities, a groundbreaking event for the legal and disability communities. Past ABA President William H. Neukom (2007-2008), in his *ABA Journal’s* President’s Message of November 2007, recognized

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<sup>6</sup> Yet what is still not known from statistics on law students is what percentage of students with disabilities graduate as opposed to students with no disabilities.

that, although it is difficult to determine the exact degree that the disabled community is underrepresented in the legal community, it is evident that “[l]awyers with disabilities, too, have greater difficulty getting a job after law school and have higher rates of unemployment than lawyers who do not have disabilities.” He called on the legal profession to embrace the objectives of then-Goal IX in order to root out invidious discrimination.

Past ABA President H. Thomas Wells, Jr. (2008-2009) hosted a series of programs with ABA leadership on Goal III. The programs culminated at his diversity summit in Washington, DC on June 18-20, 2009. That same week he hosted—along with this Commission, the Association of Corporate Counsel, and the Minority Corporate Counsel Association—the Second ABA National Conference on the Employment of Lawyers with Disabilities. More information about the employment conference, including the event’s official report, can be found at: <http://www.abanet.org/disability>. After the employment conference, at the ABA Annual Meeting, President Wells held a follow-up meeting to discuss the transitional steps for promoting diversity in the legal profession.

Immediate-Past President Carolyn B. Lamm (2009-2010) made diversity a central focus of her term. Under her Presidential Diversity Initiative, President Lamm created the Presidential Diversity Commission. The Diversity Commission’s purpose was to help, among other groups, lawyers with disabilities “navigate the cultures and practices in law firms and corporations to pierce the glass

ceiling.” The Diversity Commission held a learning program series for diverse lawyers—that included presenters with disabilities—throughout the 2009-2010 bar year and published a blueprint for promoting diversity in the legal profession, *Diversity in the Legal Profession: Next Steps* (available at: <http://new.abanet.org/centers/diversity/PublicDocuments/Next%20Steps%20Final-Virtual%20Accessible%20042010.pdf>).

The current President, Stephen N. Zack, in promoting a forthcoming Commission publication on the employment of persons with disabilities (see Section VIII.B below), has emphasized the importance of ABA Goal III and declared that: “Employing persons with disabilities is not only the right thing to do, but it is sensible and wise.”

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<http://www.abanet.org/disability>

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## REFERENCES

*Information and data from the American Bar Association is on file with the Commission.*

- Cornell University, Rehabilitation Research and Training Center on Employment Policy for Persons with Disabilities, *2008 Disability Status Report United States*, 2010, available at: <http://www.ilr.cornell.edu/edi/disabilitystatistics/>
- Cornell University, Rehabilitation Research and Training Center on Employment Policy for Persons with Disabilities, Presentation on *The Employment of Americans with Disabilities Survey*, 2010 (on file with Commission)
- Cornell University, Rehabilitation Research and Training Center on Employment Policy for Persons with Disabilities, *2009 Progress Report on the Economic Well-Being of Working-Age People with Disabilities*, Sept. 2009, available at: <http://digitalcommons.ilr.cornell.edu/cgi/viewcontent.cgi?article=1283&context=edicollect>
- Fremstad, Shawn, Center for Economic and Policy Research, *Half in Ten: Why Taking Disability into Account is Essential to Reducing Income Poverty and Expanding Economic Inclusion*, Sept. 2009, available at: <http://www.cepr.net/documents/publications/poverty-disability-2009-09.pdf>
- Kaye, H. Stephen, *The Impact of the 2007-09 Recession on Workers with Disabilities*, Monthly Labor Review, 19, Oct. 2010, available at: <http://www.bls.gov/opub/mlr/2010/10/mlr201010.pdf>
- Kessler Foundation/National Organization on Disability, *Survey of Employment of Americans with Disabilities Executive Summary*, Oct. 2010, available at: <http://www.2010disabilitysurveys.org/octsurvey/pdfs/surveyresults.pdf>
- Kessler Foundation/National Organization on Disability, *The ADA, 20 Years Later, Executive Summary*, July 2010, available at: <http://www.2010disabilitysurveys.org/pdfs/surveysummary.pdf>
- National Association for Law Placement, *Jobs & JDs: Employment and Salaries of New Law Graduates, Class of 2009*, 2010
- Shapiro, Joseph, *Job Crunch Even Harder on People with Disabilities*, National Public Radio, Nov. 27, 2009, available at: <http://www.npr.org/templates/story/story.php?storyId=120852418>
- United States Department of Labor, Bureau of Labor Statistics, *Economic News Release, Persons with a Disability: Labor Force Characteristics Summary*, and accompanying Table 3, Aug. 25, 2010, available at: <http://www.bls.gov/news.release/disabl.nr0.htm>
- Weiss, Debra Cassens, *Largest Law Firms Still Shrinking, Shedding 1,400 Lawyers This Year*, ABA Journal, Nov. 8, 2010
- Weiss, Debra Cassens, *Legal sector loses Jobs Two Months in a Row*, ABA Journal, Dec. 6, 2010
- Yslas, Stephen D., *Making Diversity an Enduring Core Value*, National Law Journal, June 14, 2010



# Building an Inclusive Workforce

A Four-Step Reference Guide to Recruiting, Hiring and Retaining Employees with Disabilities

Introduction

STEP 1 - Business Strategies that Work

STEP 2 - Creating an Inclusive Culture

STEP 3 - Recruiting and Hiring

STEP 4 - Retaining and Advancing Employees

Resources and Links for Federal Agencies



U.S. Department of Labor  
Office of Disability Employment Policy  
[dol.gov/odep](http://dol.gov/odep)



# Competence and Flexibility...

...they are vital skills that employers seek. Today more than ever, businesses need people with the ability to adapt to different situations and circumstances. And perhaps more than any other group, people with disabilities possess precisely these attributes. On a daily basis, people with disabilities must think creatively about how to solve problems and accomplish tasks. In the workplace, this translates into innovative thinking, fresh ideas and varied approaches to confronting challenges and achieving success.

While research shows that people with disabilities make excellent employees, not all employers know how to effectively recruit, retain and advance individuals with disabilities. That's where this booklet can help. It provides a quick outline of four simple steps to increasing workforce inclusion, complete with web links to resources available to help businesses benefit from the talents of qualified individuals with disabilities.

*(Continued on next page)*

*Niki Swann,  
English Teacher  
and Graduate  
Student*



Introduction

# Competence and Flexibility...

*(Continued from previous page)*

This tool was developed by the U.S. Department of Labor's Office of Disability Employment Policy (ODEP). To learn more about DOL's efforts to increase employment opportunities for people with disabilities, visit ODEP's website at [dol.gov/odep](http://dol.gov/odep).

*The people featured in this guide are people with disabilities—not models—photographed in their workplaces. Some of their disabilities are apparent, some are not. They reflect just a few of the millions of people with disabilities who add value to America's workplaces and economy every day.*

*Elizabeth Kumar,  
Peer Mentor*



Introduction

# Business Strategies that Work

When it comes to doing business, inclusion of workers with disabilities offers a competitive edge. By incorporating people with disabilities into their human capital strategies, employers expand their pool of talent, skills and creative business solutions. The resources below illustrate how workplace practices that include people with disabilities benefit everyone and make good business sense.

- **Business Strategies that Work: A Framework for Disability Inclusion**

Identifies promising employment policies and practices for recruiting, hiring, retaining and advancing qualified individuals with disabilities

[dol.gov/odep/pdf/BusinessStrategiesThatWork.pdf](http://dol.gov/odep/pdf/BusinessStrategiesThatWork.pdf)

- **Employer Engagement Strategy Final Report**

Discusses commitment to hire, workplace diversity and inclusiveness

[dol.gov/odep/pdf/20150201EESFinalReport.pdf](http://dol.gov/odep/pdf/20150201EESFinalReport.pdf)

- **Workplace Accommodations: Low Cost, High Impact**

Summary of research revealing the low cost of accommodations for employees with disabilities relative to their positive impact

[AskJAN.org/media/lowcosthighimpact.html](http://AskJAN.org/media/lowcosthighimpact.html)

*(Continued on next page)*

*Mat McCollough,  
Executive Director  
of a Municipal Agency*



STEP 1 - Business Strategies that Work

# Business Strategies that Work

*(Continued from previous page)*

- **Tax Incentives**

Description of various tax incentives for which employers who hire people with disabilities may qualify

[AskJAN.org/media/tax.html](http://AskJAN.org/media/tax.html)

- **Business Sense**

Monthly newsletter featuring disability-related topics of interest to employers

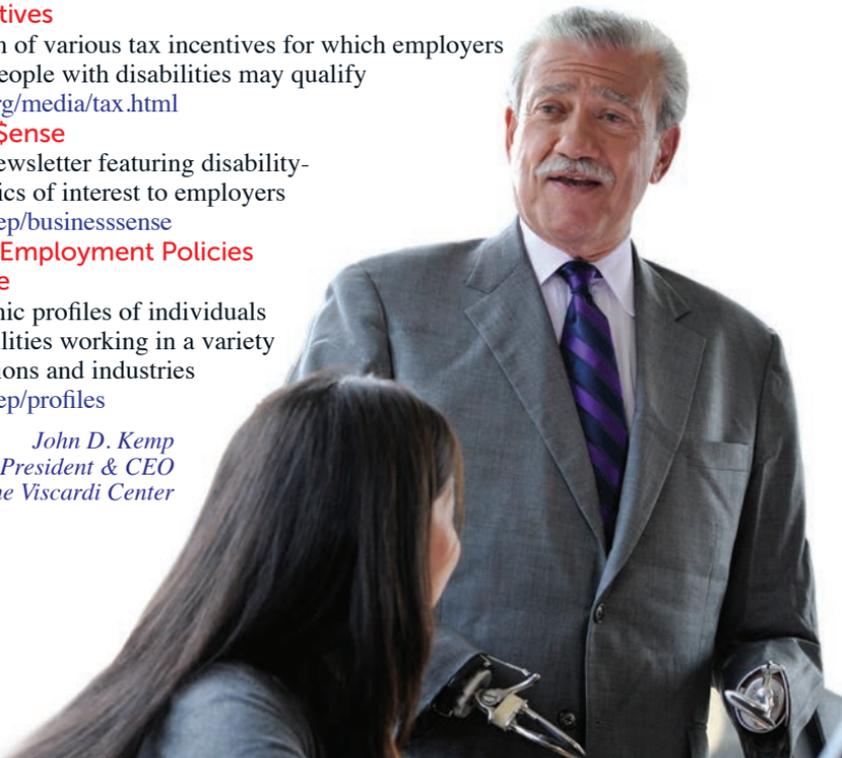
[dol.gov/odep/businesssense](http://dol.gov/odep/businesssense)

- **Disability Employment Policies in Practice**

Photographic profiles of individuals with disabilities working in a variety of occupations and industries

[dol.gov/odep/profiles](http://dol.gov/odep/profiles)

*John D. Kemp  
President & CEO  
The Viscardi Center*



STEP 1 - Business Strategies that Work

# Creating an Inclusive Culture

Organizations that value and appreciate each person for their individual differences and experiences benefit from diverse perspectives. Creating such an inclusive culture isn't difficult, but does require some forethought. The resources below can foster a welcoming work environment that is flexible and open to the talents of all qualified individuals, including those with disabilities.

- **What can YOU do? Campaign for Disability Employment**

Nationwide campaign that offers a range of resources to assist organizations in implementing internal disability employment awareness programs  
[whatcanyoudocampaign.org](http://whatcanyoudocampaign.org)

- **National Disability Employment Awareness Month**

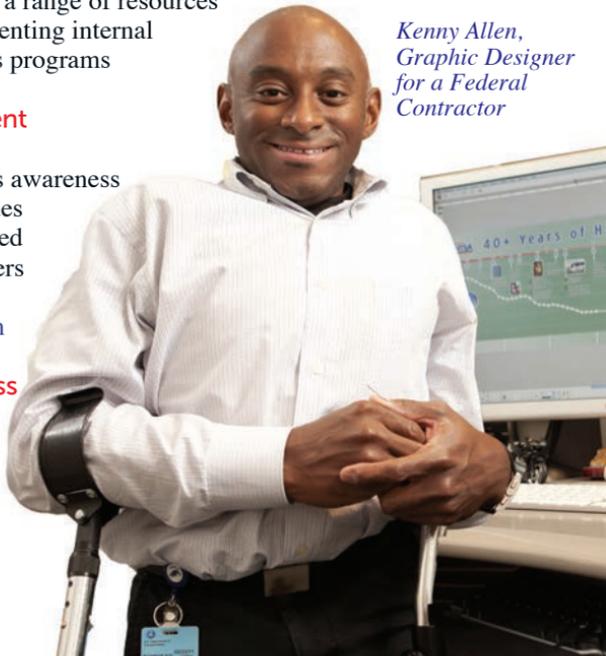
Annual outreach effort that raises awareness about disability employment issues and celebrates the many and varied contributions of America's workers with disabilities  
[dol.gov/odep/topics/NDEAM.htm](http://dol.gov/odep/topics/NDEAM.htm)

- **Small Business & Disability Employment: Steps to Success**

Outlines effective strategies for small businesses for recruiting and retaining qualified people with disabilities  
[AskEARN.org/StepsToSuccess](http://AskEARN.org/StepsToSuccess)

*(Continued on next page)*

*Kenny Allen,  
Graphic Designer  
for a Federal  
Contractor*



STEP 2 - Creating an Inclusive Culture

# Creating an Inclusive Culture

*(Continued from previous page)*

- **A Toolkit for Establishing and Maintaining Successful Employee Resource Groups**

Guidance for employers interested in developing or enhancing an Employee Resource Group (ERG) focused on disability

[AskEARN.org/wp-content/uploads/docs/erg\\_toolkit.pdf](https://www.asksk.com/wp-content/uploads/docs/erg_toolkit.pdf)

- **Emergency Preparedness Resources**

Effective emergency plans and resources for employees with disabilities

[dol.gov/odep/topics/EmergencyPreparedness.htm](https://www.dol.gov/odep/topics/EmergencyPreparedness.htm)

- **Disability Etiquette Resources**

Information about disability etiquette in various workplace settings, including speaking engagements and customer service environments

[AskJAN.org/topics/disetiq.htm](https://www.asksk.com/topics/disetiq.htm)

- **Disability Nondiscrimination Law Advisor**

Guidance for employers on determining which federal disability nondiscrimination laws apply to their business or organization and how to ensure compliance with them

[dol.gov/elaws/odep.htm](https://www.dol.gov/elaws/odep.htm)

*R.J. Martin,  
Circulation  
Clerk at a  
County  
Library*



*(Continued on next page)*

**STEP 2 - Creating an Inclusive Culture**

# Creating an Inclusive Culture

*(Continued from previous page)*

- **Do Ask, Do Tell: Encouraging Employees with Disabilities to Self-Identify**

Explores research related to disability disclosure in the workplace and identifies strategies for encouraging it in the context of the updates to Section 503 of the Rehabilitation Act

[AskEARN.org/wp-content/uploads/docs/do\\_ask\\_do\\_tell.pdf](http://AskEARN.org/wp-content/uploads/docs/do_ask_do_tell.pdf)

- **2014 National Study of Employers: Including the Talents of Employees with Disabilities**

Proposes recommendations for employers invested in improving employment opportunities for individuals with disabilities

[familiesandwork.org/downloads/nse-14-disabilities.pdf](http://familiesandwork.org/downloads/nse-14-disabilities.pdf)

- **Fostering Disability-Inclusive Workplaces Through Employee Resource Groups**

Explores how Employee Resource Groups can benefit employee and employer alike

[AskEARN.org/wp-content/uploads/docs/askearn\\_employeeresourcegroup\\_factsheet.pdf](http://AskEARN.org/wp-content/uploads/docs/askearn_employeeresourcegroup_factsheet.pdf)

For additional resources related to creating an inclusive culture, visit ODEP's Diversity and Inclusion webpage at: [dol.gov/odep/topics/diversityandinclusion.htm](http://dol.gov/odep/topics/diversityandinclusion.htm) and Changing Attitudes webpage: [dol.gov/odep/topics/changingattitudes.htm](http://dol.gov/odep/topics/changingattitudes.htm).

# Recruiting and Hiring

The goal of the recruitment and hiring process is to attract and identify individuals who have the best mix of skills and attributes for the job available. Ensuring that all qualified individuals—including those with disabilities—can participate in the process is critical to achieving this goal. The resources below can assist in understanding how to be disability inclusive in recruiting and hiring.

- **Employer Assistance and Resource Network on Disability Inclusion (EARN)**  
Free consultation and technical assistance for employers seeking to recruit and hire qualified individuals with disabilities  
[AskEARN.org](http://AskEARN.org)
- **Workforce Recruitment Program (WRP)**  
Program that connects employers with pre-screened, highly motivated college students and recent graduates with disabilities seeking internships or permanent employment  
[dol.gov/odep/wrp](http://dol.gov/odep/wrp)

*(Continued on next page)*

*Munir Bashir,  
Team Leader at an  
Electronics Store*



**STEP 3 - Recruiting and Hiring**

# Recruiting and Hiring

*(Continued from previous page)*

- **American Job Centers**  
Nationwide network of centers that can help businesses find qualified workers, including workers with disabilities  
[servicelocator.org](http://servicelocator.org); 1-877-USA-JOBS
- **Vocational Rehabilitation Agencies**  
State agencies that link employers to job candidates with disabilities in their local areas  
[soar.AskJAN.org/IssueConcern/214](http://soar.AskJAN.org/IssueConcern/214)
- **Partnership on Employment and Accessible Technology (PEAT)**  
Multi-faceted initiative promoting the employment, retention and career advancement of people with disabilities through the development, adoption and promotion of accessible technology  
[PEATworks.org](http://PEATworks.org)
- **TalentWorks**  
A service of PEAT that helps employers and human resources (HR) professionals make their eRecruiting technologies accessible to all job seekers—including those with disabilities  
[PEATworks.org/talentworks](http://PEATworks.org/talentworks)

*(Continued on next page)*



*Meg Krause,  
Public Relations  
Professional  
and Veteran*

# Recruiting and Hiring

*(Continued from previous page)*

- **Inclusive Internship Programs: A How-To Guide for Employers**

Provides background and guidance on establishing inclusive internship programs  
[dol.gov/odep/pdf/InclusiveInternshipPrograms.pdf](http://dol.gov/odep/pdf/InclusiveInternshipPrograms.pdf)

For additional resources related to the recruitment and hiring of people with disabilities, visit ODEP's Recruitment and Retention webpage at [dol.gov/odep/topics/recruitmentandretention.htm](http://dol.gov/odep/topics/recruitmentandretention.htm) and Accommodations webpage at [dol.gov/odep/topics/accommodations.htm](http://dol.gov/odep/topics/accommodations.htm).



*Michael Adams,  
Accounting Assistant*

STEP 3 - Recruiting and Hiring

# Retaining and Advancing Valued Employees

Employers and employees both benefit from a work environment that facilitates the retention of all skilled, qualified workers through effective job accommodations for employees with disabilities. The resources below can assist in understanding how to effectively retain the talents of qualified employees with disabilities and help them advance and achieve workplace success.

- **Job Accommodation Network (JAN)**

Free, expert and confidential guidance on workplace accommodations for employees with disabilities

[AskJAN.org](http://AskJAN.org); 1-800-526-7234 (Voice); 1-877-781-9403 (TTY)

- **Employer Assistance and Resource Network on Disability Inclusion (EARN)**

Free consultation and technical assistance for employers seeking to retain and advance employees with disabilities

[AskEARN.org](http://AskEARN.org)

- **Return-to-Work Toolkit**

Information about the return-to-work process and resources to assist in getting employees back on the job quickly and smoothly after illness or injury

[dol.gov/odep/return-to-work](http://dol.gov/odep/return-to-work)

*(Continued on next page)*

*Eric Wright,  
Lead Technologist*



# Retaining and Advancing Valued Employees

*(Continued from previous page)*

- **Workplace Flexibility Toolkit**  
Tools employers can use to adjust time, location and manner in which an employee works  
[dol.gov/odep/workplaceflexibility/](http://dol.gov/odep/workplaceflexibility/)
- **Workplace Accommodation Toolkit**  
Resources and guidance on inclusive practices related to the reasonable accommodation process  
[askjan.org/toolkit](http://askjan.org/toolkit)
- **Customized Employment/Flexible Work Arrangements**  
Information about customized employment, a flexible work arrangement that can assist users in retaining valued employees, including those with disabilities  
[dol.gov/odep/topics/customizedemployment.htm](http://dol.gov/odep/topics/customizedemployment.htm)
- **Soft Skills**  
Introduction to workplace interpersonal and professional skills for employees  
[dol.gov/odep/topics/youth/softskills](http://dol.gov/odep/topics/youth/softskills)

*(Continued on next page)*

*Kathy Peery,  
Legislative Affairs  
Specialist for a  
Federal Agency*



*(Continued from previous page)*

- **Supporting Employees Who Experience Unexpected Illness or Disability**  
Factsheet on Stay-at-Work/Return-to-Work strategies  
[dol.gov/odep/pdf/20140917StayAtWork.pdf](http://dol.gov/odep/pdf/20140917StayAtWork.pdf)
- **Job Accommodation Network Multimedia Training Microsite**  
Provides resources for employers to conduct training on disability employment topics for individuals or groups of employees  
[askjan.org/training/library.htm](http://askjan.org/training/library.htm)
- **Medical- and Disability-Related Leave Advisor**  
Guidance on the medical and disability leave to which employees may be entitled  
[webapps.dol.gov/elaws/mdrl](http://webapps.dol.gov/elaws/mdrl)

For additional resources related to retaining and advancing people with disabilities, visit ODEP's Recruitment and Retention webpage at [dol.gov/odep/topics/recruitmentandretention.htm](http://dol.gov/odep/topics/recruitmentandretention.htm) and Accommodations webpage at [dol.gov/odep/topics/accommodations.htm](http://dol.gov/odep/topics/accommodations.htm).

# Resources and Links for Federal Agencies

As the nation's largest employer, the Federal Government must model effective policies and practices that advance America's ideal of equal opportunity for all. Regulations implementing Section 501 of the Rehabilitation Act of 1973 (Section 501) specify that federal agencies must become model employers of individuals with disabilities. Federal agencies are required to develop and maintain "an affirmative action program plan" for the hiring, placement and advancement of individuals with disabilities.

The resources on the next two pages can assist in fulfilling this directive.

- **Toolkit for Federal Agencies on Hiring People with Disabilities**  
Outline of five-step process and related resources to assist federal agencies in their efforts to increase the employment of people with disabilities  
[dol.gov/odep/federal-hire](http://dol.gov/odep/federal-hire)
- **eFedLink**  
Online community of practice designed to help federal disability employment professionals advance federal employment for persons with disabilities  
[eFedLink.org](http://eFedLink.org)
- **Federal Agency Employment Strategies: A Framework for Disability Inclusion**  
Outline of proactive disability employment strategies to attract and retain qualified job seekers with disabilities  
[dol.gov/odep/pdf/FAEStrategies.pdf](http://dol.gov/odep/pdf/FAEStrategies.pdf)
- **Workforce Recruitment Program**  
Program that connects federal employers with pre-screened, highly motivated college students and recent graduates with disabilities seeking internships or permanent employment  
[dol.gov/odep/wrp](http://dol.gov/odep/wrp)

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# Resources and Links for Federal Agencies

*(Continued from previous page)*

- **Schedule A Hiring Authority: Your Fast Track to Disability Inclusion!**  
Explains the use of the Schedule A hiring authority for a variety of audiences  
[dol.gov/odep/pdf/20160129-ScheduleA.pdf](https://dol.gov/odep/pdf/20160129-ScheduleA.pdf)
- **Computer/Electronic Accommodations Program (CAP)**  
Centrally funded accommodation program that provides assistive technology and services free of charge to federal agencies  
[cap.mil](https://cap.mil)
- **Federal Workplace Mentoring Primer**  
Overview of basic practices, strategies and available tools and resources for establishing formal mentoring relationships and programs within federal workplaces  
[AskEARN.org/wp-content/uploads/docs/fed-wmp.pdf](https://AskEARN.org/wp-content/uploads/docs/fed-wmp.pdf)
- **Veterans Preference Advisor**  
Guidance on preferences that veterans, including wounded warriors, may be entitled to with regard to federal employment  
[dol.gov/elaws/vetspref.htm](https://dol.gov/elaws/vetspref.htm)
- **Federal Disability Hiring Programs**  
An overview of initiatives and flexibilities in hiring processes intended to increase the employment of people with disabilities in the Federal Government  
[opm.gov/disability](https://opm.gov/disability)
- **Equal Employment Opportunity Commission (EEOC)**  
A resource for laws, regulations, policy guidance, fact sheets, Q & A's, best practices and other information on disability discrimination  
[eoc.gov/laws/types/disability.cfm](https://eoc.gov/laws/types/disability.cfm)

For additional resources for federal employers, visit ODEP's Federal Employers webpage at [dol.gov/odep/topics/federalemployment.htm](https://dol.gov/odep/topics/federalemployment.htm).

# DRIVING CHANGE CREATING OPPORTUNITY



U.S. Department of Labor  
Office of Disability Employment Policy  
[dol.gov/odep](https://dol.gov/odep)

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*To order additional copies of  
Building an Inclusive Workforce, go to:  
<https://orders.gpo.gov/odep.aspx>*

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## Here's How Google's Blind Lawyer Does His Job

Josh Block - Bloomberg Law, Blake Edwards -  
Writer and Lawyer in New York

Sept. 12, 2016



### Here's How Google's Blind Lawyer Does His Job



On his daily commute from New Jersey, Jack Chen, a lawyer in Google's New York offices in Chelsea, navigates two train stations, the subway, and busy sidewalks using only what he can hear and smell, the feedback he gets from his cane, and the mental map he's created in the six years he's worked at Google.

"Poles and columns, such as you'll find in the lower level of the A/C/E train in Penn Station, are some of my nemeses," he said. "I figured out that if I pass the first one and hang what is approximately a 45 degree angle, I can walk through all of them without encountering another one."

Last month, Chen, totally blind since 16, let us tag along on the last legs of his commute. He also gave us an inside look at his life at Google, showing us around the offices and sitting for a video interview. A graduate of Fordham Law School, Chen started as an associate patent counsel at Google in 2010. In 2014 he became the company's product counsel in charge of Chrome: what he called "the quarterback or the general counsel of the product from a legal perspective."

When Gayathri Rajan, a VP of product management based in California, first started emailing with him, she didn't know Chen was visually impaired. "No one [at Google] is going to tell you, 'Hey, Jack is going to be working as product counsel, and by the way, he's blind.'"

Chen has degrees in computer science from Harvard and Berkeley. Before law school, Chen interned at AT&T, and worked as a systems engineer at Xanboo Inc., a New York-based startup that produced internet-based home automation and security systems (the company was acquired by AT&T in 2010).

He also spent two years as a patent and trademark attorney in the New York office of Kenyon & Kenyon, and three years as an associate at Baker Botts.

Susan Lang, president and CEO of Lime Connect, a non-profit that helps people with disabilities find jobs, believes companies are missing out on people like Chen.

“No existing organization was focused on high potential candidates at universities, and people who had graduated university,” Lang said in an interview last month. “Corporate America was missing out on some potential rock stars.”

According to [Census Bureau statistics](#) organized by Cornell University, there were more than 7 million adults, age 21-64, with a visual disability in the U.S. in 2014. Only about 27 percent had full-time, year-round employment, and almost 60 percent were completely unemployed.

Blind lawyers in particular have made a mark publicly — like former Skadden Fellow [Haben Girma](#); or international human rights lawyer [Chen Guangcheng](#) — and even hold a place in popular culture, like Marvel Comic's [Daredevil](#) character.

In 2013, the American Bar Association [issued a pledge](#) asking employers to affirm their commitment to diversity in the legal profession, “including diversity with respect to individuals with mental, physical, and sensory disabilities.” The pledge has been signed by a number of Big Law firms, and large companies like Microsoft, Starbucks, and Walgreens.

“Diversity and accessibility are broader than just what people look like or culture: It's all walks of life, including people with disabilities,” said Myisha Frazier, a senior corporate counsel at Google, and Chen's supervisor.

According to a **2011 report** from the ABA, almost seven percent of its members reported having a disability. Although 41 percent of ABA entities reported having a lawyer with a disability in a leadership position, there were no chairs or chairs-elect with a disability.

“It’s important that we have laws in place protecting people — the ‘stick’ model — but what’s really going to drive lasting change is when people with disabilities are in the C-suite, running companies,” Chen said.

»»»»

Chen reads by listening: he uses a screen reader at his desk, where he’s usually standing (when he’s not working on a nearby treadmill desk), and the VoiceOver function on his iPhone. Typically, Chen has the speed set at around 620 words a minute, a speed that is, to the untrained ear, incomprehensible.

When Chen travels for work, he has some familiar spaces mapped out in his head, but his personal assistant, Carolyn Lewis, often looks up where he’s going and writes out step-by-step instructions to help Chen avoid the biggest obstacles as he walks down unfamiliar streets, checks in at a new hotel, or makes his way through an airport.

## Blind Lawyer Competes in Ironman Triathlon



When Chen attended CNET's CES conference in Las Vegas earlier this year, held annually to showcase the latest tech gadgets, Gayathri said she was worried about Chen walking with the Google team around Vegas. He had no trouble keeping up, she said.

Chen has competed in five triathlons, including two Iron Man triathlons, consisting of a 2.4-mile swim, a 112-mile bicycle ride, and a 26.2-mile run.

Chen does the swimming and running portions by hooking to another athlete with a length of rope; he rides the biking portion on a tandem bicycle. When Chen was preparing for his most recent triathlon, he said he routinely got up at 3:00 a.m. to train before coming into the office.

Asked about his work ethic, Lewis said, "The best way that I can put it is, I very often have a hard time keeping up with him."

In 2012, Chen climbed Mount Kilimanjaro in Tanzania. "Kilimanjaro has the distinction of being one of the Seven Summits that is doable without special climbing gear," Chen said. "I wanted to test myself but I didn't have a lot of

time to work on learning climbing techniques. I figured if I liked it, I could get into the gear later and try other peaks.”

As we were wrapping up our video interview last month, our camera operator Douglas Higginbotham had a question about Chen’s Kilimanjaro trip: “Don’t take this the wrong way,” he said. “But if you can’t see the view when you get to the top, why would you climb a mountain?”

Lewis, Chen’s assistant, answered before Chen had a chance: “Because it’s there,” she said.



Courtesy of Jack Chen

Courtesy of Jack Chen Chen says that as a child he could see light, colors, and vague shapes, and recalls riding his bike in the street, able to navigate by the sharp contrast between the

blacktop and the curbs. Chen believes experiences like these helped him later, when all of his vision was gone.

"I generally couldn't see cars and had to pretty much rely on my sense of sound to alert me if there was one coming," Chen said. "Thankfully electric cars weren't popular back then."

At 16, Chen underwent an operation to improve his vision, but the surgery, his eighth or ninth at that time, went poorly. "My optic nerve was damaged in earlier operations in one eye," Chen said. "In the remaining eye, during a critical part of the operation, my head involuntarily moved, and there was some hemorrhaging. My retina broke apart."

The precise medical reasons for his disability are unclear, Chen said, but there's good reason to think it's genetic: Chen's brother, Richard, was also born with a severe visually impairment, though he's not totally blind.

A double graduate of Harvard, he's also, like Chen, the beneficiary of some genetic gifts. "He's that guy who won all of the awards in school," Chen said.

»»»»

Perhaps surprisingly, of all the miles he's biked, swam, ridden, and climbed, Chen was most animated and loquacious describing his daily commute from New Jersey.

Normally, he relies heavily on his ears to get him where he's going, but in parts of Penn Station, the subway platform especially, it's too loud and hectic to make sense of what he's hearing, he said.

## Fall While Filming Google's Jack Chen



"I also use smells to tell me where I am," Chen said. "I pass by a coffee place and the Subway sandwich place, and those are smell landmarks to let me know that I have properly made that left turn and am heading to the subway."

Once Chen leaves the subway station at 14th street, a few blocks from his office, he's over the hump but not exactly home free: "There are planters and a driveway with cars sometimes," he said. "You can imagine how difficult this is for someone who can essentially 'see', with a cane, only three to four feet in front of them."

When we followed Chen on his commute last month, we met up with him in Penn Station at 8:45, rode the subway to Chelsea, and filmed him walking to his office on Ninth Avenue. Just a few hundred yards from the office, Higginbotham, camera mounted on his shoulder to record Chen's journey, was backpedaling, and tripped and fell into a flower bed.

There were immediately obvious comparisons to be made: it turns out being able to see

where you're going does come in handy when walking. Chen just smiled and asked if everyone was okay.

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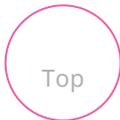
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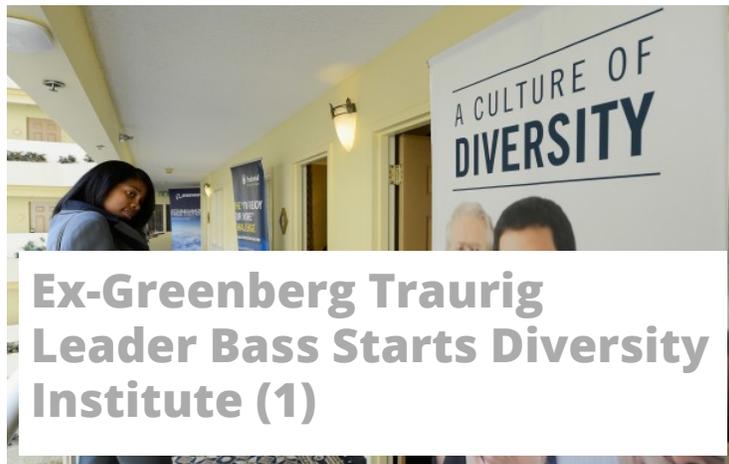


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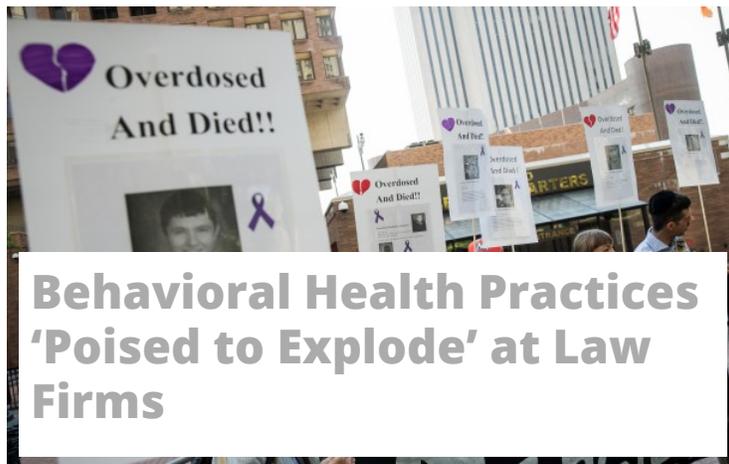




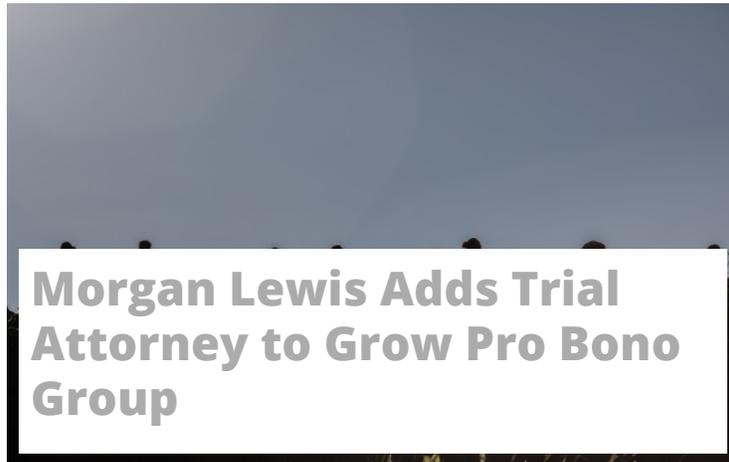
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## U.S. DEPARTMENT OF LABOR

# Hiring People with Disabilities

The U.S. Department of Labor's [Office of Disability Employment Policy](#) (ODEP) supports several initiatives that help employers interested in hiring individuals with disabilities, including:

- The [Employer Assistance and Resource Network on Disability Inclusion](#) (EARN) is a free, nationwide service that educates employers about effective strategies for recruiting, hiring, retaining and advancing people with disabilities. EARN also maintains a list of [job posting websites](#) geared toward job seekers with disabilities and a collection of [success stories](#) about employers that have made a commitment to disability inclusion.
- The [Workforce Recruitment Program for College Students with Disabilities](#) (WRP) is a free resource that connects private businesses and federal agencies nationwide with qualified job candidates for temporary or permanent positions in a variety of fields. Applicants are highly motivated postsecondary students and recent graduates with disabilities who are eager to prove their abilities in the workforce. Through [WRP.jobs](#), private employers interested in gaining access to these individuals can post permanent and temporary positions. WRP participants can then search and apply for these positions using an employer's standard application processes.
- The [Job Accommodation Network](#) (JAN) provides free, expert advice on workplace accommodations that may be necessary to assist qualified individuals with disabilities apply for a job and maximize their productivity once onboard.
- Although not a resource for hiring per se, the [Campaign for Disability Employment](#) offers a variety of media assets, including video public service announcements, all designed to encourage employers and others to recognize the value and talent people with disabilities add to America's workplaces and economy. Employers can use these resources in the workplace to help spark conversations about disability issues.

ODEP also offers several fact sheets and other resources to educate employers about effective [recruitment and hiring strategies](#), as well as laws such as [Title I of the Americans with Disabilities Act](#) (ADA), which protects the employment rights of people with disabilities. The [U.S. Equal Employment Opportunity Commission](#) enforces the employment provisions of the ADA under Title I.

### U.S. Department of Labor Resources on Hiring People with Disabilities

- [Work Opportunity Tax Credit](#)

- [Tax Incentives for Employers](#)
- [Inclusive Internship Programs: A How-to Guide for Employers](#)
- [Building an Inclusive Workforce — A Four-Step Reference Guide to Recruiting, Hiring and Retaining Employees with Disabilities](#)

### **Other Resources on Hiring People with Disabilities**

- [Disability:IN](#) - Tools and programs to bridge inclusive companies with people and organizations within the disability community.
- [Employer Incentives for Hiring People with Disabilities: Federal Tax Incentives At-A-Glance](#)
- [Where Can I Find Qualified Applicants with Disabilities?](#)
- [Interviewing Job Candidates with Disabilities](#)
- [Information for Employers from the Job Accommodation Network](#)
- [Hiring Veterans with Service-Connected Disabilities](#)
- [Steps Small Businesses Can Take to Recruit and Retain Qualified People with Disabilities](#)



## U.S. DEPARTMENT OF LABOR

# Job Accommodations

A job accommodation is an adjustment to a job or work environment that makes it possible for an individual with a disability to perform their job duties. Accommodations may include specialized equipment, modifications to the work environment or adjustments to work schedules or responsibilities. Not all people with disabilities (or even all people with the same disability) need the same accommodation. For example, a job applicant who is deaf may need a sign language interpreter during the job interview; an employee who is blind or who has low vision may need someone to read information posted on a bulletin board; and an employee with diabetes may need regularly scheduled breaks during the workday to monitor blood sugar and insulin levels.

The Job Accommodation Network (JAN), a service of the U.S. Department of Labor's Office of Disability Employment Policy (ODEP) is the leading source of expert, confidential guidance on workplace accommodations and provides one-on-one consultation to employers and employees, as well as service providers and others, free of charge.

Under Title I of the Americans with Disabilities Act, there are three areas in which reasonable accommodations may be needed:

- Adjustments to the job application process so a qualified applicant with a disability can be considered for a position;
- Modifications to the physical work environment, or to the way a job is usually performed, so an individual with a disability can perform the essential functions of that position; and
- Changes that enable an employee with a disability to enjoy equal benefits and privileges of employment like those that are enjoyed by other employees without disabilities. This may include access to cafeterias, lounges, auditoriums and company-provided transportation.

The only legal limitation on an employer's obligation to provide reasonable accommodation is that the changes or modifications may not cause "undue hardship" to the employer. "Undue hardship" means significant difficulty, including accommodations that are overly extensive or disruptive, or which could impact the actual running of a business.

### U.S. Department of Labor Resources on Job Accommodations

- [ODEP Accommodations Topic Page](#)
- [Reasonable Accommodation for Employees and Applicants with Disabilities](#)
- [Maximizing Productivity: Accommodations for Employees with Psychiatric Disabilities](#)

### **Other Resources on Job Accommodations**

- [Job Accommodation Network](#)
  - [Employees' Practical Guide to Negotiating and Requesting Reasonable Accommodations Under the Americans with Disabilities Act](#)
  - [Employers' Practical Guide to Negotiating and Requesting Reasonable Accommodations Under the Americans with Disabilities Act](#)
  - [Accommodation Ideas Based on Disability Type](#)
  - [JAN's Searchable Online Accommodation Resource](#)
- [What are Reasonable Accommodations?](#)
- [Technology and Job Accommodations Bring Many Jobs Within Reach](#)
- [Computer/Electronic Accommodations Program \(Federal\)](#)

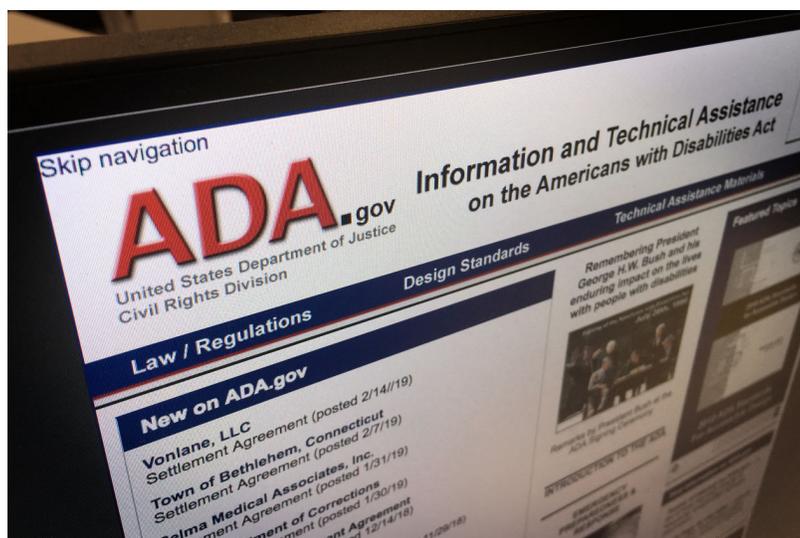
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<https://www.wsj.com/articles/lawsuits-surge-over-websites-access-for-the-blind-11550415600>

U.S.

# Lawsuits Surge Over Websites' Access for the Blind

Complaints are new frontier in federal disability litigation, typically detailing roadblocks for 'screen reader' tools that read content aloud



The Americans With Disabilities Act prohibits discrimination against the disabled in all places of public accommodation, which most courts have interpreted to include websites connected to a physical business. PHOTO: PARKER ESHELMAN/THE WALL STREET JOURNAL

*By Sara Randazzo*

Feb. 17, 2019 10:00 a.m. ET

Businesses with websites that can't be navigated by the blind are getting pummeled with lawsuits.

The new frontier in federal disability litigation has accelerated dramatically in recent years, with some companies now getting hit by lawsuits for the second or third time even after they've reached settlements to upgrade their sites.

The complaints typically detail roadblocks that visually impaired individuals face when using “screen reader” tools that read the contents of a website aloud. The lawsuits often seek improvements to websites to ensure the technology functions.

Companies say the suits—targeting restaurants and retail stores, art galleries and banks—are fueled by plaintiffs’ lawyers looking for an easy payday. Disabled consumers argue they deserve to be able to access the internet freely.

The number of website-access lawsuits filed in federal court reached 2,250 in 2018, almost three times the 814 filed in 2017, according to law firm Seyfarth Shaw LLP. Most of the cases have been filed in New York and Florida, the firm’s data shows, though a recent appellate decision is likely to prompt more action in California.

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Navigating the internet can be a frustrating experience for the visually impaired. Joseph DiNero, an assistive technology specialist with Helen Keller Services for the Blind, said when he tries to use websites and mobile apps, it sometimes feels like “I’m penalized because I’m blind.”

On an inaccessible site, screen readers can’t properly translate the content. They get stuck, simply saying “image” instead of describing it, or not saying which information should be typed into blank fields on an ordering page.

Defense lawyers say their clients aren’t trying to exclude the visually impaired, but rather that the federal Americans With Disabilities Act isn’t clear on whether and how websites should comply with the law.

The ADA prohibits discrimination against the disabled in all places of public accommodation, which most courts have interpreted to include websites connected to a physical business.

The Justice Department said in 2010 it would create website-access guidelines. It delayed the rule-making, then dropped it—leaving businesses to argue that they can’t upgrade websites to standards that don’t exist. The Justice Department declined to comment.

Plaintiffs' lawyers and courts say that argument is a poor excuse.

In a closely watched ruling, the Ninth U.S. Circuit Court of Appeals recently sided with a blind man who sued Domino's Pizza in 2016 after he was unable to order customized pizzas from the restaurant's website. The court said the federal disability law unequivocally applies to the pizza chain's website and mobile app.

Domino's "has received fair notice" of the need for its technology to be accessible, the court said, adding that, "Our Constitution does not require that Congress or DOJ spell out exactly how Domino's should fulfill this obligation."

A Domino's spokesman declined to comment.

Most website-access lawsuits settle, lawyers involved say—often for \$20,000 or less in attorney fees and costs, plus an agreement to improve websites within two years. Overhauling a website to make it work seamlessly with screen readers can cost from several thousand to several hundred thousand dollars, depending on the complexity.

"There's no excuse for companies today not to have fixed and remediated their websites," said Jeffrey Gottlieb, a New York attorney who has filed hundreds of ADA website cases. "I find only a lawsuit pushes them to do it."

Florida defense lawyer Anastasia Protopapadakis says her clients usually don't resist updating their websites. But when they get hit with a complaint, she said, "a lot of them feel this is just a method of legal extortion."

An analysis by UsableNet, a provider of accessibility technology and services, found that 20% of the website lawsuits filed in 2018 were against companies that had already been sued.

Retailers including Prada USA Corp., the Sherwin-Williams Co. , Michael Kors Retail Inc. and Forever 21 Inc. all have been sued multiple times, court filings show. So has restaurant chain Applebee's and financial company PNC Financial Services . The companies either declined to comment or didn't respond to requests for comment.

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# Web Content Accessibility Guidelines (WCAG) 2.1



W3C Recommendation 05 June 2018

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Please check the [errata](#) for any errors or issues reported since publication.

See also [translations](#).

This document is also available in non-normative formats, available from [Alternate Versions of Web Content Accessibility Guidelines 2.1](#).

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## Abstract

Web Content Accessibility Guidelines (WCAG) 2.1 covers a wide range of recommendations for making Web content more accessible. Following these guidelines will make content more accessible to a wider range of people with disabilities, including accommodations for blindness and low vision, deafness and hearing loss, limited movement, speech disabilities, photosensitivity, and combinations of these, and some accommodation for learning disabilities and cognitive limitations; but will not address every user need for people with these disabilities. These guidelines address accessibility of web content on desktops, laptops, tablets, and mobile devices. Following these guidelines will also often make Web content more usable to users in general.

WCAG 2.1 success criteria are written as testable statements that are not technology-specific. Guidance about satisfying the success criteria in specific technologies, as well as general information about interpreting the success criteria, is provided in separate documents. See [Web Content Accessibility Guidelines \(WCAG\) Overview](#) for an introduction and links to WCAG technical and educational material.

WCAG 2.1 extends [Web Content Accessibility Guidelines 2.0 \[WCAG20\]](#), which was published as a W3C Recommendation December 2008. Content that conforms to WCAG 2.1 also conforms to WCAG 2.0. The WG intends that for policies requiring conformance to WCAG 2.0, WCAG 2.1 can provide an alternate means of conformance. The publication of WCAG 2.1 does not deprecate or supersede WCAG 2.0. While WCAG 2.0 remains a W3C Recommendation, the W3C advises the use of WCAG 2.1 to maximize future applicability of accessibility efforts. The W3C also encourages use of the most current version of WCAG when developing or updating Web accessibility policies.

## Status of This Document

*This section describes the status of this document at the time of its publication. Other documents may supersede this document. A list of current W3C publications and the latest revision of this technical report can be found in the [W3C technical reports index](#) at <https://www.w3.org/TR/>.*

This is a [Recommendation](#) of WCAG 2.1 by the [Accessibility Guidelines Working Group](#).

This document has been reviewed by W3C Members, by software developers, and by other W3C groups and interested parties, and is endorsed by the Director as a W3C Recommendation. It is a stable document and may be used as reference material or cited from another document. W3C's role in

making the Recommendation is to draw attention to the specification and to promote its widespread deployment. This enhances the functionality and interoperability of the Web.

By publishing this Recommendation, W<sup>3</sup>C expects the functionality specified in this Recommendation will not be affected by changes to CSS Values and Units Module Level 3 or by Pointer Events Level 2. The Working Group will continue to track these specifications.

To comment, [file an issue in the W<sup>3</sup>C WCAG GitHub repository](#). The Working Group requests that public comments be filed as new issues, one issue per discrete comment. It is free to create a GitHub account to file issues. If filing issues in GitHub is not feasible, send email to [public-agwg-comments@w3.org](mailto:public-agwg-comments@w3.org) ([comment archive](#)). Comments received on the WCAG 2.1 Recommendation cannot result in changes to this version of the guidelines, but may be addressed in errata or future versions of WCAG. The Working Group does not plan to make formal responses to comments. A list of [issues filed](#) as well as [Archives of the AG WG mailing list discussions](#) are publicly available, and future work undertaken by the Working Group may address comments received on this document.

This document was published by the [Accessibility Guidelines Working Group](#) as a Recommendation.

Please see the Working Group's [implementation report](#).

This document has been reviewed by W<sup>3</sup>C Members, by software developers, and by other W<sup>3</sup>C groups and interested parties, and is endorsed by the Director as a W<sup>3</sup>C Recommendation. It is a stable document and may be used as reference material or cited from another document. W<sup>3</sup>C's role in making the Recommendation is to draw attention to the specification and to promote its widespread deployment. This enhances the functionality and interoperability of the Web.

This document was produced by a group operating under the [W<sup>3</sup>C Patent Policy](#). W<sup>3</sup>C maintains a [public list of any patent disclosures](#) made in connection with the deliverables of the group; that page also includes instructions for disclosing a patent. An individual who has actual knowledge of a patent which the individual believes contains [Essential Claim\(s\)](#) must disclose the information in accordance with [section 6 of the W<sup>3</sup>C Patent Policy](#).

This document is governed by the [1 February 2018 W<sup>3</sup>C Process Document](#).

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## Introduction

*This section is non-normative.*

### 0.1 Background on WCAG 2

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Web Content Accessibility Guidelines (WCAG) 2.1 defines how to make Web content more accessible to people with disabilities. Accessibility involves a wide range of disabilities, including visual, auditory, physical, speech, cognitive, language, learning, and neurological disabilities. Although these guidelines cover a wide range of issues, they are not able to address the needs of people with all types, degrees, and combinations of disability. These guidelines also make Web content more usable by older individuals with changing abilities due to aging and often improve usability for users in general.

WCAG 2.1 is developed through the [W3C process](#) in cooperation with individuals and organizations around the world, with a goal of providing a shared standard for Web content accessibility that meets the needs of individuals, organizations, and governments internationally. WCAG 2.1 builds on WCAG 2.0 [[WCAG20](#)], which in turn built on WCAG 1.0 [[WAI-WEBCONTENT](#)] and is designed to apply broadly to different Web technologies now and in the future, and to be testable with a combination of

automated testing and human evaluation. For an introduction to WCAG, see the [Web Content Accessibility Guidelines \(WCAG\) Overview](#).

Significant challenges were encountered in defining additional criteria to address cognitive, language, and learning disabilities, including a short timeline for development as well as challenges in reaching consensus on testability, implementability, and international considerations of proposals. Work will carry on in this area in future versions of WCAG. We encourage authors to refer to our supplemental guidance on [improving inclusion for people with disabilities, including learning and cognitive disabilities, people with low-vision, and more](#).

Web accessibility depends not only on accessible content but also on accessible Web browsers and other user agents. Authoring tools also have an important role in Web accessibility. For an overview of how these components of Web development and interaction work together, see:

- [Essential Components of Web Accessibility](#)
- [User Agent Accessibility Guidelines \(UAAG\) Overview](#)
- [Authoring Tool Accessibility Guidelines \(ATAG\) Overview](#)

## 0.2 WCAG 2 Layers of Guidance

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The individuals and organizations that use WCAG vary widely and include Web designers and developers, policy makers, purchasing agents, teachers, and students. In order to meet the varying needs of this audience, several layers of guidance are provided including overall *principles*, general *guidelines*, testable *success criteria* and a rich collection of *sufficient techniques*, *advisory techniques*, and *documented common failures* with examples, resource links and code.

- **Principles** - At the top are four principles that provide the foundation for Web accessibility: *perceivable*, *operable*, *understandable*, and *robust*. See also [Understanding the Four Principles of Accessibility](#).
- **Guidelines** - Under the principles are guidelines. The 13 guidelines provide the basic goals that authors should work toward in order to make content more accessible to users with different disabilities. The guidelines are not testable, but provide the framework and overall objectives to help authors understand the success criteria and better implement the techniques.
- **Success Criteria** - For each guideline, testable success criteria are provided to allow WCAG 2.0 to be used where requirements and conformance testing are necessary such as in design specification, purchasing, regulation, and contractual agreements. In order to meet the needs of different groups and different situations, three levels of conformance are defined: A (lowest), AA,

and AAA (highest). Additional information on WCAG levels can be found in [Understanding Levels of Conformance](#).

- **Sufficient and Advisory Techniques** - For each of the *guidelines* and *success criteria* in the WCAG 2.0 document itself, the working group has also documented a wide variety of *techniques*. The techniques are informative and fall into two categories: those that are *sufficient* for meeting the success criteria and those that are *advisory*. The advisory techniques go beyond what is required by the individual success criteria and allow authors to better address the guidelines. Some advisory techniques address accessibility barriers that are not covered by the testable success criteria. Where common failures are known, these are also documented. See also [Sufficient and Advisory Techniques in Understanding WCAG 2.0](#).

All of these layers of guidance (principles, guidelines, success criteria, and sufficient and advisory techniques) work together to provide guidance on how to make content more accessible. Authors are encouraged to view and apply all layers that they are able to, including the advisory techniques, in order to best address the needs of the widest possible range of users.

Note that even content that conforms at the highest level (AAA) will not be accessible to individuals with all types, degrees, or combinations of disability, particularly in the cognitive language and learning areas. Authors are encouraged to consider the full range of techniques, including the advisory techniques, as well as to seek relevant advice about current best practice to ensure that Web content is accessible, as far as possible, to this community. [Metadata](#) may assist users in finding content most suitable for their needs.

### 0.3 WCAG 2.1 Supporting Documents



The WCAG 2.0 document is designed to meet the needs of those who need a stable, referenceable technical standard. Other documents, called supporting documents, are based on the WCAG 2.0 document and address other important purposes, including the ability to be updated to describe how WCAG would be applied with new technologies. Supporting documents include:

1. [How to Meet WCAG 2.1](#) - A customizable quick reference to WCAG 2.1 that includes all of the guidelines, success criteria, and techniques for authors to use as they are developing and evaluating Web content. This includes content from WCAG 2.0 and WCAG 2.1 and can be filtered in many ways to help authors focus on relevant content.
2. [Understanding WCAG 2.1](#) - A guide to understanding and implementing WCAG 2.1. There is a short "Understanding" document for each guideline and success criterion in WCAG 2.1 as well as key topics.

3. [Techniques for WCAG 2.1](#) - A collection of techniques and common failures, each in a separate document that includes a description, examples, code and tests.
4. [The WCAG Documents](#) - A diagram and description of how the technical documents are related and linked.

See [Web Content Accessibility Guidelines \(WCAG\) Overview](#) for a description of the WCAG 2.0 supporting material, including education resources related to WCAG 2. Additional resources covering topics such as the business case for Web accessibility, planning implementation to improve the accessibility of Web sites, and accessibility policies are listed in [WAI Resources](#).

## 0.4 Requirements for WCAG 2.1

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WCAG 2.1 meets a set of [requirements for WCAG 2.1](#) which, in turn, inherit requirements from WCAG 2.0. Requirements structure the overall framework of guidelines and ensure backwards compatibility. The Working Group also used a less formal set of acceptance criteria for success criteria, to help ensure success criteria are similar in style and quality to those in WCAG 2.0. These requirements constrained what could be included in WCAG 2.1. This constraint was important to preserve its nature as a dot-release of WCAG 2.

## 0.5 Comparison with WCAG 2.0

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WCAG 2.1 was initiated with the goal to improve accessibility guidance for three major groups: users with cognitive or learning disabilities, users with low vision, and users with disabilities on mobile devices. Many ways to meet these needs were proposed and evaluated, and a set of these were refined by the Working Group. Structural requirements inherited from WCAG 2.0, clarity and impact of proposals, and timeline led to the final set of success criteria included in this version. The Working Group considers that WCAG 2.1 incrementally advances web content accessibility guidance for all these areas, but underscores that not all user needs are met by these guidelines.

WCAG 2.1 builds on and is backwards compatible with WCAG 2.0, meaning web pages that conform to WCAG 2.1 also conform to WCAG 2.0. Authors that are required by policy to conform with WCAG 2.0 will be able to update content to WCAG 2.1 without losing conformance with WCAG 2.0. Authors following both sets of guidelines should be aware of the following differences:

### 0.5.1 New Features in WCAG 2.1

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WCAG 2.1 extends WCAG 2.0 by adding new success criteria, definitions to support them, guidelines to organize the additions, and a couple additions to the conformance section. This additive approach helps to make it clear that sites which conform to WCAG 2.1 also conform to WCAG 2.0, thereby meeting conformance obligations that are specific to WCAG 2.0. The Accessibility Guidelines Working Group recommends that sites adopt WCAG 2.1 as their new conformance target, even if formal obligations mention WCAG 2.0, to provide improved accessibility and to anticipate future policy changes.

The following Success Criteria are new in WCAG 2.1:

- 1.3.4 [Orientation](#) (AA)
- 1.3.5 [Identify Input Purpose](#) (AA)
- 1.3.6 [Identify Purpose](#) (AAA)
- 1.4.10 [Reflow](#) (AA)
- 1.4.11 [Non-Text Contrast](#) (AA)
- 1.4.12 [Text Spacing](#) (AA)
- 1.4.13 [Content on Hover or Focus](#) (AA)
- 2.1.4 [Character Key Shortcuts](#) (A)
- 2.2.6 [Timeouts](#) (AAA)
- 2.3.3 [Animation from Interactions](#) (AAA)
- 2.5.1 [Pointer Gestures](#) (A)
- 2.5.2 [Pointer Cancellation](#) (A)
- 2.5.3 [Label in Name](#) (A)
- 2.5.4 [Motion Actuation](#) (A)
- 2.5.5 [Target Size](#) (AAA)
- 2.5.6 [Concurrent Input Mechanisms](#) (AAA)
- 4.1.3 [Status Messages](#) (AA)

Many of these success criteria reference new terms that have also been added to the glossary and form part of the normative requirements of the success criteria.

In the Conformance section, a third note about page variants has been added to [Full Pages](#), and an option for machine-readable metadata added to [Optional Components of a Conformance Claim](#).

## 0.5.2 Numbering in WCAG 2.1



In order to avoid confusion for implementers for whom backwards compatibility to WCAG 2.0 is important, new success criteria in WCAG 2.1 have been appended to the end of the set of success criteria within their guideline. This avoids the need to change the section number of success criteria from WCAG 2.0, which would be caused by inserting new success criteria between existing success criteria in the guideline, but it means success criteria in each guideline are no longer grouped by conformance level. The order of success criteria within each guideline does not imply information about conformance level; only the conformance level indicator (A / AA / AAA) on the success criterion itself indicates this. The [WCAG 2.1 Quick Reference](#) provides ways to view success criteria grouped by conformance level, along with many other filter and sort options.

## 0.5.3 Conformance to WCAG 2.1



WCAG 2.1 uses the same conformance model as WCAG 2.0 with a couple additions, which is described in the [Conformance](#) section. It is intended that sites that conform to WCAG 2.1 also conform to WCAG 2.0, which means they meet the requirements of any policies that reference WCAG 2.0, while also better meeting the needs of users on the current Web.

## 0.6 Later Versions of Accessibility Guidelines



In parallel with WCAG 2.1, the Accessibility Guidelines Working Group is developing another major version of accessibility guidelines. The result of this work is expected to be a more substantial restructuring of web accessibility guidance than would be realistic for dot-releases of WCAG 2. The work follows a research-focused, user-centered design methodology to produce the most effective and flexible outcome, including the roles of content authoring, user agent support, and authoring tool support. This is a multi-year effort, so WCAG 2.1 is needed as an interim measure to provide updated web accessibility guidance to reflect changes on the web since the publication of WCAG 2.0. The Working Group might also develop additional interim versions, continuing with WCAG 2.2, on a similar short timeline to provide additional support while the major version is completed.

# 1. Perceivable



Information and user interface components must be presentable to users in ways they can perceive.

## Guideline 1.1 Text Alternatives



Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

### Success Criterion 1.1.1 Non-text Content

§

(Level A)

<a href="#">Understanding Non-text Content</a>
<a href="#">How to Meet Non-text Content</a>

All [non-text content](#) that is presented to the user has a [text alternative](#) that serves the equivalent purpose, except for the situations listed below.

- **Controls, Input:** If non-text content is a control or accepts user input, then it has a [name](#) that describes its purpose. (Refer to [Success Criterion 4.1.2](#) for additional requirements for controls and content that accepts user input.)
- **Time-Based Media:** If non-text content is time-based media, then text alternatives at least provide descriptive identification of the non-text content. (Refer to [Guideline 1.2](#) for additional requirements for media.)
- **Test:** If non-text content is a test or exercise that would be invalid if presented in [text](#), then text alternatives at least provide descriptive identification of the non-text content.
- **Sensory:** If non-text content is primarily intended to create a [specific sensory experience](#), then text alternatives at least provide descriptive identification of the non-text content.
- **CAPTCHA:** If the purpose of non-text content is to confirm that content is being accessed by a person rather than a computer, then text alternatives that identify and describe the purpose of the non-text content are provided, and alternative forms of CAPTCHA using output modes for different types of sensory perception are provided to accommodate different disabilities.
- **Decoration, Formatting, Invisible:** If non-text content is [pure decoration](#), is used only for visual formatting, or is not presented to users, then it is implemented in a way that it can be ignored by [assistive technology](#).

## Guideline 1.2 Time-based Media

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Provide alternatives for time-based media.

### Success Criterion 1.2.1 Audio-only and Video-only (Prerecorded)

§

(Level A)

<a href="#">Understanding Audio-only and Video-only (Prerecorded)</a> <a href="#">How to Meet Audio-only and Video-only (Prerecorded)</a>
--

For [prerecorded audio-only](#) and prerecorded [video-only](#) media, the following are true, except when the audio or video is a [media alternative for text](#) and is clearly labeled as such:

- **Prerecorded Audio-only:** An [alternative for time-based media](#) is provided that presents equivalent information for prerecorded audio-only content.
- **Prerecorded Video-only:** Either an alternative for time-based media or an audio track is provided that presents equivalent information for prerecorded video-only content.

### Success Criterion 1.2.2 Captions (Prerecorded)

§

(Level A)

<a href="#">Understanding Captions (Prerecorded)</a> <a href="#">How to Meet Captions (Prerecorded)</a>
--

[Captions](#) are provided for all [prerecorded audio](#) content in [synchronized media](#), except when the media is a [media alternative for text](#) and is clearly labeled as such.

### Success Criterion 1.2.3 Audio Description or Media Alternative (Prerecorded)

§

(Level A)

<a href="#">Understanding Audio Description or Media Alternative (Prerecorded)</a> <a href="#">How to Meet Audio Description or Media Alternative (Prerecorded)</a>
--

An [alternative for time-based media](#) or [audio description](#) of the [prerecorded video](#) content is provided for [synchronized media](#), except when the media is a [media alternative for text](#) and is clearly labeled as such.

### Success Criterion 1.2.4 Captions (Live)

§

(Level AA)

<a href="#">Understanding Captions (Live)</a> <a href="#">How to Meet Captions (Live)</a>
--

[Captions](#) are provided for all [live audio](#) content in [synchronized media](#).

### Success Criterion 1.2.5 Audio Description (Prerecorded)

§

(Level AA)

<a href="#">Understanding Audio Description (Prerecorded)</a> <a href="#">How to Meet Audio Description (Prerecorded)</a>
--

[Audio description](#) is provided for all [prerecorded video](#) content in [synchronized media](#).

### Success Criterion 1.2.6 Sign Language (Prerecorded)

§

(Level AAA)

[Sign language interpretation](#) is provided for all [prerecorded audio](#) content in [synchronized media](#).

<a href="#">Understanding Sign Language (Prerecorded)</a> <a href="#">How to Meet Sign Language (Prerecorded)</a>
--

### Success Criterion 1.2.7 Extended Audio Description (Prerecorded)

§

(Level AAA)

Where pauses in foreground audio are insufficient to allow [audio descriptions](#) to convey the sense of the video, [extended audio description](#) is provided for all [prerecorded video](#) content in [synchronized media](#).

<a href="#">Understanding Extended Audio Description (Prerecorded)</a> <a href="#">How to Meet Extended Audio Description (Prerecorded)</a>
--

### Success Criterion 1.2.8 Media Alternative (Prerecorded)

§

(Level AAA)

An [alternative for time-based media](#) is provided for all [prerecorded synchronized media](#) and for all prerecorded [video-only](#) media.

<a href="#">Understanding Media Alternative (Prerecorded)</a> <a href="#">How to Meet Media Alternative (Prerecorded)</a>
--

### Success Criterion 1.2.9 Audio-only (Live)

§

(Level AAA)

An [alternative for time-based media](#) that presents equivalent information for [live audio-only](#) content is provided.

<a href="#">Understanding Audio-only (Live)</a> <a href="#">How to Meet Audio-only (Live)</a>
--

## Guideline 1.3 Adaptable

§

Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

### Success Criterion 1.3.1 Info and Relationships

§

(Level A)

<a href="#">Understanding Info and Relationships</a>
<a href="#">How to Meet Info and Relationships</a>

Information, [structure](#), and [relationships](#) conveyed through [presentation](#) can be [programmatically determined](#) or are available in text.

### Success Criterion 1.3.2 Meaningful Sequence

§

(Level A)

<a href="#">Understanding Meaningful Sequence</a>
<a href="#">How to Meet Meaningful Sequence</a>

When the sequence in which content is presented affects its meaning, a [correct reading sequence](#) can be [programmatically determined](#).

### Success Criterion 1.3.3 Sensory Characteristics

§

(Level A)

<a href="#">Understanding Sensory Characteristics</a>
<a href="#">How to Meet Sensory Characteristics</a>

Instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, color, size, visual location, orientation, or sound.

#### NOTE

For requirements related to color, refer to [Guideline 1.4](#).

### Success Criterion 1.3.4 Orientation

§

(Level AA)

<a href="#">Understanding Orientation</a>
<a href="#">How to Meet Orientation</a>

Content does not restrict its view and operation to a single display orientation, such as portrait or landscape, unless a specific display orientation is [essential](#).

**NOTE**

Examples where a particular display orientation may be essential are a bank check, a piano application, slides for a projector or television, or virtual reality content where binary display orientation is not applicable.

**Success Criterion 1.3.5 Identify Input Purpose**

§

(Level AA)

<a href="#">Understanding Identify Input Purpose</a> <a href="#">How to Meet Identify Input Purpose</a>
--

The purpose of each input field collecting information about the user can be [programmatically determined](#) when:

- The input field serves a purpose identified in the [Input Purposes for User Interface Components section](#); and
- The content is implemented using technologies with support for identifying the expected meaning for form input data.

**Success Criterion 1.3.6 Identify Purpose**

§

(Level AAA)

<a href="#">Understanding Identify Purpose</a> <a href="#">How to Meet Identify Purpose</a>
--

In content implemented using markup languages, the purpose of [User Interface Components](#), icons, and [regions](#) can be [programmatically determined](#).

**Guideline 1.4 Distinguishable**

§

Make it easier for users to see and hear content including separating foreground from background.

**Success Criterion 1.4.1 Use of Color**

§

(Level A)

<a href="#">Understanding Use of Color</a> <a href="#">How to Meet Use of Color</a>
--

Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element.

**NOTE**

This success criterion addresses color perception specifically. Other forms of perception are covered in [Guideline 1.3](#) including programmatic access to color and other visual presentation coding.

**Success Criterion 1.4.2 Audio Control**

§

(Level A)

<a href="#">Understanding Audio Control</a> <a href="#">How to Meet Audio Control</a>
--

If any audio on a Web page plays automatically for more than 3 seconds, either a [mechanism](#) is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level.

**NOTE**

Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether or not it is used to meet other success criteria) must meet this success criterion. See [Conformance Requirement 5: Non-Interference](#).

**Success Criterion 1.4.3 Contrast (Minimum)**

§

(Level AA)

<a href="#">Understanding Contrast (Minimum)</a> <a href="#">How to Meet Contrast (Minimum)</a>
--

The visual presentation of [text](#) and [images of text](#) has a [contrast ratio](#) of at least 4.5:1, except for the following:

- **Large Text:** [Large-scale](#) text and images of large-scale text have a contrast ratio of at least 3:1;
- **Incidental:** Text or images of text that are part of an inactive [user interface component](#), that are [pure decoration](#), that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement.
- **Logotypes:** Text that is part of a logo or brand name has no contrast requirement.

**Success Criterion 1.4.4 Resize text**

§

(Level AA)

<a href="#">Understanding Resize text</a> <a href="#">How to Meet Resize text</a>
--

Except for [captions](#) and [images of text](#), [text](#) can be resized without [assistive technology](#) up to 200 percent without loss of content or functionality.

### Success Criterion 1.4.5 Images of Text

§

(Level AA)

<a href="#">Understanding Images of Text</a> <a href="#">How to Meet Images of Text</a>
--

If the technologies being used can achieve the visual presentation, [text](#) is used to convey information rather than [images of text](#) except for the following:

- **Customizable:** The image of text can be [visually customized](#) to the user's requirements;
- **Essential:** A particular presentation of text is [essential](#) to the information being conveyed.

#### NOTE

Logotypes (text that is part of a logo or brand name) are considered essential.

### Success Criterion 1.4.6 Contrast (Enhanced)

§

(Level AAA)

<a href="#">Understanding Contrast (Enhanced)</a> <a href="#">How to Meet Contrast (Enhanced)</a>
--

The visual presentation of [text](#) and [images of text](#) has a [contrast ratio](#) of at least 7:1, except for the following:

- **Large Text:** [Large-scale](#) text and images of large-scale text have a contrast ratio of at least 4.5:1;
- **Incidental:** Text or images of text that are part of an inactive [user interface component](#), that are [pure decoration](#), that are not visible to anyone, or that are part of a picture that contains significant other visual content, have no contrast requirement.
- **Logotypes:** Text that is part of a logo or brand name has no contrast requirement.

### Success Criterion 1.4.7 Low or No Background Audio

§

(Level AAA)

<a href="#">Understanding Low or No Background Audio</a>
--

For [prerecorded audio-only](#) content that (1) contains primarily speech in the foreground, (2) is not an audio [CAPTCHA](#) or audio logo, and (3) is not vocalization intended to be primarily musical expression such as singing or rapping, at least one of the following is true:

[How to Meet Low or No Background Audio](#)

- **No Background:** The audio does not contain background sounds.
- **Turn Off:** The background sounds can be turned off.
- **20 dB:** The background sounds are at least 20 decibels lower than the foreground speech content, with the exception of occasional sounds that last for only one or two seconds.

#### NOTE

Per the definition of "decibel," background sound that meets this requirement will be approximately four times quieter than the foreground speech content.

### Success Criterion 1.4.8 Visual Presentation

§

(Level AAA)

[Understanding Visual Presentation](#)  
[How to Meet Visual Presentation](#)

For the visual presentation of [blocks of text](#), a [mechanism](#) is available to achieve the following:

- Foreground and background colors can be selected by the user.
- Width is no more than 80 characters or glyphs (40 if CJK).
- Text is not justified (aligned to both the left and the right margins).
- Line spacing (leading) is at least space-and-a-half within paragraphs, and paragraph spacing is at least 1.5 times larger than the line spacing.
- Text can be resized without assistive technology up to 200 percent in a way that does not require the user to scroll horizontally to read a line of text [on a full-screen window](#).

### Success Criterion 1.4.9 Images of Text (No Exception)

§

(Level AAA)

[Images of text](#) are only used for [pure decoration](#) or where a particular presentation of [text](#) is [essential](#) to the information being conveyed.

[Understanding Images of Text \(No Exception\)](#)  
[How to Meet Images of Text \(No Exception\)](#)

**NOTE**

Logotypes (text that is part of a logo or brand name) are considered essential.

**Success Criterion 1.4.10 Reflow**§

(Level AA)

<a href="#">Understanding Reflow</a> <a href="#">How to Meet Reflow</a>
--

Content can be presented without loss of information or functionality, and without requiring scrolling in two dimensions for:

- Vertical scrolling content at a width equivalent to 320 [CSS pixels](#);
- Horizontal scrolling content at a height equivalent to 256 [CSS pixels](#).

Except for parts of the content which require two-dimensional layout for usage or meaning.

**NOTE**

Note: 320 CSS pixels is equivalent to a starting viewport width of 1280 CSS pixels wide at 400% zoom. For web content which are designed to scroll horizontally (e.g. with vertical text), the 256 CSS pixels is equivalent to a starting viewport height of 1024px at 400% zoom.

**NOTE**

Examples of content which require two-dimensional layout are images, maps, diagrams, video, games, presentations, data tables, and interfaces where it is necessary to keep toolbars in view while manipulating content.

**Success Criterion 1.4.11 Non-text Contrast**§

(Level AA)

<a href="#">Understanding Non-text Contrast</a> <a href="#">How to Meet Non-text Contrast</a>
--

The visual [presentation](#) of the following have a [contrast ratio](#) of at least 3:1 against adjacent color(s):

- **User Interface Components:** Visual information required to identify [user interface components](#) and [states](#), except for inactive components or where the appearance of the component is determined by the user agent and not modified by the author;
- **Graphical Objects:** Parts of graphics required to understand the content, except when a particular presentation of graphics is [essential](#) to the information being conveyed.

## Success Criterion 1.4.12 Text Spacing

§

(Level AA)

<a href="#">Understanding Text Spacing</a>
<a href="#">How to Meet Text Spacing</a>

In content implemented using markup languages that support the following [text style properties](#), no loss of content or functionality occurs by setting all of the following and by changing no other style property:

- Line height (line spacing) to at least 1.5 times the font size;
- Spacing following paragraphs to at least 2 times the font size;
- Letter spacing (tracking) to at least 0.12 times the font size;
- Word spacing to at least 0.16 times the font size.

Exception: Human languages and scripts that do not make use of one or more of these text style properties in written text can conform using only the properties that exist for that combination of language and script.

## Success Criterion 1.4.13 Content on Hover or Focus

§

(Level AA)

<a href="#">Understanding Content on Hover or Focus</a>
<a href="#">Focus</a>
<a href="#">How to Meet Content on Hover or Focus</a>

Where receiving and then removing pointer hover or keyboard focus triggers additional content to become visible and then hidden, the following are true:

- **Dismissable:** A [mechanism](#) is available to dismiss the additional content without moving pointer hover or keyboard focus, unless the additional content communicates an [input error](#) or does not obscure or replace other content;
- **Hoverable:** If pointer hover can trigger the additional content, then the pointer can be moved over the additional content without the additional content disappearing;
- **Persistent:** The additional content remains visible until the hover or focus trigger is removed, the user dismisses it, or its information is no longer valid.

Exception: The visual presentation of the additional content is controlled by the user agent and is not modified by the author.

#### NOTE

Examples of additional content controlled by the user agent include browser tooltips created through use of the HTML [title attribute](#).

#### NOTE

Custom tooltips, sub-menus, and other nonmodal popups that display on hover and focus are examples of additional content covered by this criterion.

## 2. Operable

§

User interface components and navigation must be operable.

### Guideline 2.1 Keyboard Accessible

§

Make all functionality available from a keyboard.

#### Success Criterion 2.1.1 Keyboard

§

(Level A)

<a href="#">Understanding Keyboard</a> <a href="#">How to Meet Keyboard</a>
--

All [functionality](#) of the content is operable through a [keyboard interface](#) without requiring specific timings for individual keystrokes, except where the underlying function requires input that depends on the path of the user's movement and not just the endpoints.

#### NOTE

This exception relates to the underlying function, not the input technique. For example, if using handwriting to enter text, the input technique (handwriting) requires path-dependent input but the underlying function (text input) does not.

**NOTE**

This does not forbid and should not discourage providing mouse input or other input methods in addition to keyboard operation.

**Success Criterion 2.1.2 No Keyboard Trap**

§

(Level A)

<a href="#">Understanding No Keyboard Trap</a> <a href="#">How to Meet No Keyboard Trap</a>
--

If keyboard focus can be moved to a component of the page using a [keyboard interface](#), then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away.

**NOTE**

Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See [Conformance Requirement 5: Non-Interference](#).

**Success Criterion 2.1.3 Keyboard (No Exception)**

§

(Level AAA)

<a href="#">Understanding Keyboard (No Exception)</a> <a href="#">How to Meet Keyboard (No Exception)</a>
--

All [functionality](#) of the content is operable through a [keyboard interface](#) without requiring specific timings for individual keystrokes.

**Success Criterion 2.1.4 Character Key Shortcuts**

§

(Level A)

<a href="#">Understanding Character Key Shortcuts</a> <a href="#">How to Meet Character Key Shortcuts</a>
--

If a [keyboard shortcut](#) is implemented in content using only letter (including upper- and lower-case letters), punctuation, number, or symbol characters, then at least one of the following is true:

- **Turn off:** A [mechanism](#) is available to turn the shortcut off;

- **Remap:** A mechanism is available to remap the shortcut to use one or more non-printable keyboard characters (e.g. Ctrl, Alt, etc);
- **Active only on focus:** The keyboard shortcut for a [user interface component](#) is only active when that component has focus.

## Guideline 2.2 Enough Time

§

Provide users enough time to read and use content.

### Success Criterion 2.2.1 Timing Adjustable

§

(Level A)

<a href="#">Understanding Timing Adjustable</a> <a href="#">How to Meet Timing Adjustable</a>
--

For each time limit that is set by the content, at least one of the following is true:

- **Turn off:** The user is allowed to turn off the time limit before encountering it; or
- **Adjust:** The user is allowed to adjust the time limit before encountering it over a wide range that is at least ten times the length of the default setting; or
- **Extend:** The user is warned before time expires and given at least 20 seconds to extend the time limit with a simple action (for example, "press the space bar"), and the user is allowed to extend the time limit at least ten times; or
- **Real-time Exception:** The time limit is a required part of a real-time event (for example, an auction), and no alternative to the time limit is possible; or
- **Essential Exception:** The time limit is [essential](#) and extending it would invalidate the activity; or
- **20 Hour Exception:** The time limit is longer than 20 hours.

#### NOTE

This success criterion helps ensure that users can complete tasks without unexpected changes in content or context that are a result of a time limit. This success criterion should be considered in conjunction with [Success Criterion 3.2.1](#), which puts limits on changes of content or context as a result of user action.

## Success Criterion 2.2.2 Pause, Stop, Hide



(Level A)

<a href="#">Understanding Pause, Stop, Hide</a>
<a href="#">How to Meet Pause, Stop, Hide</a>

For moving, [blinking](#), scrolling, or auto-updating information, all of the following are true:

- **Moving, blinking, scrolling:** For any moving, blinking or scrolling information that (1) starts automatically, (2) lasts more than five seconds, and (3) is presented in parallel with other content, there is a mechanism for the user to [pause](#), stop, or hide it unless the movement, blinking, or scrolling is part of an activity where it is [essential](#); and
- **Auto-updating:** For any auto-updating information that (1) starts automatically and (2) is presented in parallel with other content, there is a mechanism for the user to pause, stop, or hide it or to control the frequency of the update unless the auto-updating is part of an activity where it is essential.

### NOTE

For requirements related to flickering or flashing content, refer to [Guideline 2.3](#).

### NOTE

Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See [Conformance Requirement 5: Non-Interference](#).

### NOTE

Content that is updated periodically by software or that is streamed to the user agent is not required to preserve or present information that is generated or received between the initiation of the pause and resuming presentation, as this may not be technically possible, and in many situations could be misleading to do so.

**NOTE**

An animation that occurs as part of a preload phase or similar situation can be considered essential if interaction cannot occur during that phase for all users and if not indicating progress could confuse users or cause them to think that content was frozen or broken.

**Success Criterion 2.2.3 No Timing**

§

(Level AAA)

<a href="#">Understanding No Timing</a> <a href="#">How to Meet No Timing</a>
--

Timing is not an [essential](#) part of the event or activity presented by the content, except for non-interactive [synchronized media](#) and [real-time events](#).

**Success Criterion 2.2.4 Interruptions**

§

(Level AAA)

<a href="#">Understanding Interruptions</a> <a href="#">How to Meet Interruptions</a>
--

Interruptions can be postponed or suppressed by the user, except interruptions involving an [emergency](#).

**Success Criterion 2.2.5 Re-authenticating**

§

(Level AAA)

<a href="#">Understanding Re-authenticating</a> <a href="#">How to Meet Re-authenticating</a>
--

When an authenticated session expires, the user can continue the activity without loss of data after re-authenticating.

**Success Criterion 2.2.6 Timeouts**

§

(Level AAA)

<a href="#">Understanding Timeouts</a> <a href="#">How to Meet Timeouts</a>
--

Users are warned of the duration of any [user inactivity](#) that could cause data loss, unless the data is preserved for more than 20 hours when the user does not take any actions.

**NOTE**

Privacy regulations may require explicit user consent before user identification has been authenticated and before user data is preserved. In cases where the user is a minor, explicit consent may not be solicited in most jurisdictions, countries or regions. Consultation with privacy professionals and legal counsel is advised when considering data preservation as an approach to satisfy this success criterion.

**Guideline 2.3 Seizures and Physical Reactions**

§

Do not design content in a way that is known to cause seizures or physical reactions.

**Success Criterion 2.3.1 Three Flashes or Below Threshold**

§

(Level A)

<a href="#">Understanding Three Flashes or Below Threshold</a> <a href="#">How to Meet Three Flashes or Below Threshold</a>
--

[Web pages](#) do not contain anything that flashes more than three times in any one second period, or the [flash](#) is below the [general flash and red flash thresholds](#).

**NOTE**

Since any content that does not meet this success criterion can interfere with a user's ability to use the whole page, all content on the Web page (whether it is used to meet other success criteria or not) must meet this success criterion. See [Conformance Requirement 5: Non-Interference](#).

**Success Criterion 2.3.2 Three Flashes**

§

(Level AAA)

<a href="#">Understanding Three Flashes</a> <a href="#">How to Meet Three Flashes</a>
--

[Web pages](#) do not contain anything that [flashes](#) more than three times in any one second period.

**Success Criterion 2.3.3 Animation from Interactions**

§

(Level AAA)

[Motion animation](#) triggered by interaction can be disabled, unless the animation is [essential](#) to the functionality or the information being conveyed.

<a href="#">Understanding Animation from Interactions</a>
<a href="#">How to Meet Animation from Interactions</a>

## Guideline 2.4 Navigable

§

Provide ways to help users navigate, find content, and determine where they are.

### Success Criterion 2.4.1 Bypass Blocks

§

(Level A)

A [mechanism](#) is available to bypass blocks of content that are repeated on multiple [Web pages](#).

<a href="#">Understanding Bypass Blocks</a>
<a href="#">How to Meet Bypass Blocks</a>

### Success Criterion 2.4.2 Page Titled

§

(Level A)

[Web pages](#) have titles that describe topic or purpose.

<a href="#">Understanding Page Titled</a>
<a href="#">How to Meet Page Titled</a>

### Success Criterion 2.4.3 Focus Order

§

(Level A)

If a [Web page](#) can be [navigated sequentially](#) and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability.

<a href="#">Understanding Focus Order</a>
<a href="#">How to Meet Focus Order</a>

### Success Criterion 2.4.4 Link Purpose (In Context)

§

(Level A)

The [purpose of each link](#) can be determined from the link text alone or from the link text together with its [programmatically determined link context](#), except where the purpose of the link would be [ambiguous to users in general](#).

<a href="#">Understanding Link Purpose (In Context)</a>
<a href="#">How to Meet Link Purpose (In Context)</a>

### Success Criterion 2.4.5 Multiple Ways

§

(Level AA)

<a href="#">Understanding Multiple Ways</a> <a href="#">How to Meet Multiple Ways</a>
--

More than one way is available to locate a [Web page](#) within a [set of Web pages](#) except where the Web Page is the result of, or a step in, a [process](#).

### Success Criterion 2.4.6 Headings and Labels

§

(Level AA)

<a href="#">Understanding Headings and Labels</a> <a href="#">How to Meet Headings and Labels</a>
--

Headings and [labels](#) describe topic or purpose.

### Success Criterion 2.4.7 Focus Visible

§

(Level AA)

<a href="#">Understanding Focus Visible</a> <a href="#">How to Meet Focus Visible</a>
--

Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible.

### Success Criterion 2.4.8 Location

§

(Level AAA)

<a href="#">Understanding Location</a> <a href="#">How to Meet Location</a>
--

Information about the user's location within a [set of Web pages](#) is available.

### Success Criterion 2.4.9 Link Purpose (Link Only)

§

(Level AAA)

<a href="#">Understanding Link Purpose (Link Only)</a> <a href="#">How to Meet Link Purpose (Link Only)</a>
--

A [mechanism](#) is available to allow the purpose of each link to be identified from link text alone, except where the purpose of the link would be [ambiguous to users in general](#).

### Success Criterion 2.4.10 Section Headings

§

(Level AAA)

<a href="#">Understanding Section Headings</a> <a href="#">How to Meet Section Headings</a>
--

[Section](#) headings are used to organize the content.

**NOTE**

"Heading" is used in its general sense and includes titles and other ways to add a heading to different types of content.

**NOTE**

This success criterion covers sections within writing, not [user interface components](#). User Interface components are covered under [Success Criterion 4.1.2](#).

## Guideline 2.5 Input Modalities

§

Make it easier for users to operate functionality through various inputs beyond keyboard.

### Success Criterion 2.5.1 Pointer Gestures

§

(Level A)

<a href="#">Understanding Pointer Gestures</a> <a href="#">How to Meet Pointer Gestures</a>
--

All [functionality](#) that uses multipoint or path-based gestures for operation can be operated with a [single pointer](#) without a path-based gesture, unless a multipoint or path-based gesture is [essential](#).

**NOTE**

This requirement applies to web content that interprets pointer actions (i.e. this does not apply to actions that are required to operate the user agent or assistive technology).

### Success Criterion 2.5.2 Pointer Cancellation

§

(Level A)

<a href="#">Understanding Pointer Cancellation</a> <a href="#">How to Meet Pointer Cancellation</a>
--

For [functionality](#) that can be operated using a [single pointer](#), at least one of the following is true:

- **No Down-Event:** The [down-event](#) of the pointer is not used to execute any part of the function;
- **Abort or Undo:**

Completion of the function is on the [up-event](#), and a [mechanism](#) is available to abort the function before completion or to undo the function after completion;

- **Up Reversal:** The up-event reverses any outcome of the preceding down-event;
- **Essential:** Completing the function on the down-event is [essential](#).

#### NOTE

Functions that emulate a keyboard or numeric keypad key press are considered essential.

#### NOTE

This requirement applies to web content that interprets pointer actions (i.e. this does not apply to actions that are required to operate the user agent or assistive technology).

### Success Criterion 2.5.3 Label in Name

§

(Level A)

<a href="#">Understanding Label in Name</a> <a href="#">How to Meet Label in Name</a>
--

For [user interface components](#) with [labels](#) that include [text](#) or [images of text](#), the [name](#) contains the text that is presented visually.

#### NOTE

A best practice is to have the text of the label at the start of the name.

### Success Criterion 2.5.4 Motion Actuation

§

(Level A)

<a href="#">Understanding Motion Actuation</a> <a href="#">How to Meet Motion Actuation</a>
--

[Functionality](#) that can be operated by device motion or user motion can also be operated by [user interface components](#) and responding to the motion can be disabled to prevent accidental actuation, except when:

- **Supported Interface:** The motion is used to operate functionality through an [accessibility supported](#) interface;

- **Essential:** The motion is [essential](#) for the function and doing so would invalidate the activity.

### Success Criterion 2.5.5 Target Size

§

(Level AAA)

<a href="#">Understanding Target Size</a> <a href="#">How to Meet Target Size</a>
--

The size of the [target](#) for [pointer inputs](#) is at least 44 by 44 [CSS pixels](#) except when:

- **Equivalent:** The target is available through an equivalent link or control on the same page that is at least 44 by 44 CSS pixels;
- **Inline:** The target is in a sentence or block of text;
- **User Agent Control:** The size of the target is determined by the user agent and is not modified by the author;
- **Essential:** A particular presentation of the target is [essential](#) to the information being conveyed.

### Success Criterion 2.5.6 Concurrent Input Mechanisms

§

(Level AAA)

<a href="#">Understanding Concurrent Input Mechanisms</a> <a href="#">How to Meet Concurrent Input Mechanisms</a>
--

Web content does not restrict use of input modalities available on a platform except where the restriction is [essential](#), required to ensure the security of the content, or required to respect user settings.

## 3. Understandable

§

Information and the operation of user interface must be understandable.

### Guideline 3.1 Readable

§

Make text content readable and understandable.

### Success Criterion 3.1.1 Language of Page

§

(Level A)

<a href="#">Understanding Language of Page</a> <a href="#">How to Meet Language of Page</a>
--

The default [human language](#) of each [Web page](#) can be [programmatically determined](#).

### Success Criterion 3.1.2 Language of Parts

§

(Level AA)

<a href="#">Understanding Language of Parts</a>
<a href="#">How to Meet Language of Parts</a>

The [human language](#) of each passage or phrase in the content can be [programmatically determined](#) except for proper names, technical terms, words of indeterminate language, and words or phrases that have become part of the vernacular of the immediately surrounding text.

### Success Criterion 3.1.3 Unusual Words

§

(Level AAA)

<a href="#">Understanding Unusual Words</a>
<a href="#">How to Meet Unusual Words</a>

A [mechanism](#) is available for identifying specific definitions of words or phrases [used in an unusual or restricted way](#), including [idioms](#) and [jargon](#).

### Success Criterion 3.1.4 Abbreviations

§

(Level AAA)

<a href="#">Understanding Abbreviations</a>
<a href="#">How to Meet Abbreviations</a>

A [mechanism](#) for identifying the expanded form or meaning of [abbreviations](#) is available.

### Success Criterion 3.1.5 Reading Level

§

(Level AAA)

<a href="#">Understanding Reading Level</a>
<a href="#">How to Meet Reading Level</a>

When text requires reading ability more advanced than the [lower secondary education level](#) after removal of proper names and titles, [supplemental content](#), or a version that does not require reading ability more advanced than the lower secondary education level, is available.

### Success Criterion 3.1.6 Pronunciation

§

(Level AAA)

<a href="#">Understanding Pronunciation</a>
<a href="#">How to Meet Pronunciation</a>

A [mechanism](#) is available for identifying specific pronunciation of words where meaning of the words, in context, is ambiguous without knowing the pronunciation.

## Guideline 3.2 Predictable

§

Make Web pages appear and operate in predictable ways.

### Success Criterion 3.2.1 On Focus

§

(Level A)

<a href="#">Understanding On Focus</a>
<a href="#">How to Meet On Focus</a>

When any [user interface component](#) receives focus, it does not initiate a [change of context](#).

### Success Criterion 3.2.2 On Input

§

(Level A)

<a href="#">Understanding On Input</a>
<a href="#">How to Meet On Input</a>

Changing the setting of any [user interface component](#) does not automatically cause a [change of context](#) unless the user has been advised of the behavior before using the component.

### Success Criterion 3.2.3 Consistent Navigation

§

(Level AA)

<a href="#">Understanding Consistent Navigation</a>
<a href="#">How to Meet Consistent Navigation</a>

Navigational mechanisms that are repeated on multiple [Web pages](#) within a [set of Web pages](#) occur in the [same relative order](#) each time they are repeated, unless a change is initiated by the user.

### Success Criterion 3.2.4 Consistent Identification

§

(Level AA)

<a href="#">Understanding Consistent Identification</a>
<a href="#">How to Meet Consistent Identification</a>

Components that have the [same functionality](#) within a [set of Web pages](#) are identified consistently.

### Success Criterion 3.2.5 Change on Request

§

(Level AAA)

<a href="#">Understanding Change on Request</a>
<a href="#">How to Meet Change on Request</a>

[Changes of context](#) are initiated only by user request or a [mechanism](#) is available to turn off such changes.

## Guideline 3.3 Input Assistance

§

Help users avoid and correct mistakes.

### Success Criterion 3.3.1 Error Identification

§

(Level A)

<a href="#">Understanding Error Identification</a> <a href="#">How to Meet Error Identification</a>
--

If an [input error](#) is automatically detected, the item that is in error is identified and the error is described to the user in text.

### Success Criterion 3.3.2 Labels or Instructions

§

(Level A)

<a href="#">Understanding Labels or Instructions</a> <a href="#">How to Meet Labels or Instructions</a>
--

[Labels](#) or instructions are provided when content requires user input.

### Success Criterion 3.3.3 Error Suggestion

§

(Level AA)

<a href="#">Understanding Error Suggestion</a> <a href="#">How to Meet Error Suggestion</a>
--

If an [input error](#) is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardize the security or purpose of the content.

### Success Criterion 3.3.4 Error Prevention (Legal, Financial, Data)

§

(Level AA)

<a href="#">Understanding Error Prevention (Legal, Financial, Data)</a> <a href="#">How to Meet Error Prevention (Legal, Financial, Data)</a>
--

For [Web pages](#) that cause [legal commitments](#) or financial transactions for the user to occur, that modify or delete [user-controllable](#) data in data storage systems, or that submit user test responses, at least one of the following is true:

- **Reversible:** Submissions are reversible.
- **Checked:** Data entered by the user is checked for input errors and the user is provided an opportunity to correct them.
- **Confirmed:** A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.

### Success Criterion 3.3.5 Help

§

(Level AAA)

<a href="#">Understanding Help</a>
<a href="#">How to Meet Help</a>

[Context-sensitive help](#) is available.

### Success Criterion 3.3.6 Error Prevention (All)

§

(Level AAA)

<a href="#">Understanding Error Prevention (All)</a>
<a href="#">How to Meet Error Prevention (All)</a>

For [Web pages](#) that require the user to submit information, at least one of the following is true:

- **Reversible:** Submissions are reversible.
- **Checked:** Data entered by the user is checked for input errors and the user is provided an opportunity to correct them.
- **Confirmed:** A mechanism is available for reviewing, confirming, and correcting information before finalizing the submission.

## 4. Robust

§

Content must be robust enough that it can be interpreted by by a wide variety of user agents, including assistive technologies.

### Guideline 4.1 Compatible

§

Maximize compatibility with current and future user agents, including assistive technologies.

### Success Criterion 4.1.1 Parsing

§

(Level A)

<a href="#">Understanding Parsing</a>
<a href="#">How to Meet Parsing</a>

In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features.

## NOTE

Start and end tags that are missing a critical character in their formation, such as a closing angle bracket or a mismatched attribute value quotation mark are not complete.

### Success Criterion 4.1.2 Name, Role, Value

§

(Level A)

<a href="#">Understanding Name, Role, Value</a>
<a href="#">How to Meet Name, Role, Value</a>

For all [user interface components](#) (including but not limited to: form elements, links and components generated by scripts), the [name](#) and [role](#) can be [programmatically determined](#); states, properties, and values that can be set by the user can be [programmatically set](#); and notification of changes to these items is available to [user agents](#), including [assistive technologies](#).

## NOTE

This success criterion is primarily for Web authors who develop or script their own user interface components. For example, standard HTML controls already meet this success criterion when used according to specification.

### Success Criterion 4.1.3 Status Messages

§

(Level AA)

<a href="#">Understanding Status Messages</a>
<a href="#">How to Meet Status Messages</a>

In content implemented using markup languages, [status messages](#) can be [programmatically determined](#) through [role](#) or properties such that they can be presented to the user by [assistive technologies](#) without receiving focus.

## 5. Conformance

§

This section lists requirements for [conformance](#) to WCAG 2.1. It also gives information about how to make conformance claims, which are optional. Finally, it describes what it means to be [accessibility supported](#), since only accessibility-supported ways of using technologies can be [relied upon](#) for conformance. [Understanding Conformance](#) includes further explanation of the accessibility-supported concept.

## 5.1 Interpreting Normative Requirements

§

The main content of WCAG 2.1 is [normative](#) and defines requirements that impact conformance claims. Introductory material, appendices, sections marked as "non-normative", diagrams, examples, and notes are [informative](#) (non-normative). Non-normative material provides advisory information to help interpret the guidelines but does not create requirements that impact a conformance claim.

The key words *MAY*, *MUST*, *MUST NOT*, *NOT RECOMMENDED*, *RECOMMENDED*, *SHOULD*, and *SHOULD NOT* are to be interpreted as described in [\[RFC2119\]](#).

## 5.2 Conformance Requirements

§

In order for a Web page to conform to WCAG 2.1, all of the following conformance requirements must be satisfied:

### 5.2.1 Conformance Level

§

One of the following levels of conformance is met in full.

- For Level A conformance (the minimum level of conformance), the [Web page satisfies](#) all the Level A Success Criteria, or a [conforming alternate version](#) is provided.
- For Level AA conformance, the Web page satisfies all the Level A and Level AA Success Criteria, or a Level AA conforming alternate version is provided.
- For Level AAA conformance, the Web page satisfies all the Level A, Level AA and Level AAA Success Criteria, or a Level AAA conforming alternate version is provided.

#### NOTE

Although conformance can only be achieved at the stated levels, authors are encouraged to report (in their claim) any progress toward meeting success criteria from all levels beyond the achieved level of conformance.

#### NOTE

It is not recommended that Level AAA conformance be required as a general policy for entire sites because it is not possible to satisfy all Level AAA Success Criteria for some content.

## 5.2.2 Full pages

§

[Conformance](#) (and conformance level) is for full [Web page\(s\)](#) only, and cannot be achieved if part of a Web page is excluded.

### NOTE

For the purpose of determining conformance, alternatives to part of a page's content are considered part of the page when the alternatives can be obtained directly from the page, e.g., a long description or an alternative presentation of a video.

### NOTE

Authors of Web pages that cannot conform due to content outside of the author's control may consider a [Statement of Partial Conformance](#).

### NOTE

New A full page includes each variation of the page that is automatically presented by the page for various screen sizes (e.g. variations in a responsive Web page). Each of these variations needs to conform (or needs to have a conforming alternate version) in order for the entire page to conform.

## 5.2.3 Complete processes

§

When a [Web page](#) is one of a series of Web pages presenting a [process](#) (i.e., a sequence of steps that need to be completed in order to accomplish an activity), all Web pages in the process conform at the specified level or better. (Conformance is not possible at a particular level if any page in the process does not conform at that level or better.)

An online store has a series of pages that are used to select and purchase products. All pages in the series from start to finish (checkout) conform in order for any page that is part of the process to conform.

## 5.2.4 Only Accessibility-Supported Ways of Using Technologies §

Only [accessibility-supported](#) ways of using [technologies](#) are [relied upon](#) to satisfy the success criteria. Any information or functionality that is provided in a way that is not accessibility supported is also available in a way that is accessibility supported. (See [Understanding accessibility support](#).)

## 5.2.5 Non-Interference §

If [technologies](#) are used in a way that is not [accessibility supported](#), or if they are used in a non-conforming way, then they do not block the ability of users to access the rest of the page. In addition, the [Web page](#) as a whole continues to meet the conformance requirements under each of the following conditions:

1. when any technology that is not [relied upon](#) is turned on in a user agent,
2. when any technology that is not relied upon is turned off in a user agent, and
3. when any technology that is not relied upon is not supported by a user agent

In addition, the following success criteria apply to all content on the page, including content that is not otherwise relied upon to meet conformance, because failure to meet them could interfere with any use of the page:

- **1.4.2 - Audio Control,**
- **2.1.2 - No Keyboard Trap,**
- **2.3.1 - Three Flashes or Below Threshold,** and
- **2.2.2 - Pause, Stop, Hide.**

### NOTE

If a page cannot conform (for example, a conformance test page or an example page), it cannot be included in the scope of conformance or in a conformance claim.

For more information, including examples, see [Understanding Conformance Requirements](#).

## 5.3 Conformance Claims (Optional) §

Conformance is defined only for [Web pages](#). However, a conformance claim may be made to cover one page, a series of pages, or multiple related Web pages.

### 5.3.1 Required Components of a Conformance Claim

§

Conformance claims are **not required**. Authors can conform to WCAG 2.1 without making a claim. However, if a conformance claim is made, then the conformance claim **must** include the following information:

1. **Date** of the claim
2. **Guidelines title, version and URI** "Web Content Accessibility Guidelines 2.1 at <https://www.w3.org/TR/WCAG21/>" In WCAG 2.0 this was a dated URI, which may need to be adjusted when this becomes a Rec.
3. **Conformance level** satisfied: (Level A, AA or AAA)
4. **A concise description of the Web pages**, such as a list of URIs for which the claim is made, including whether subdomains are included in the claim.

#### NOTE

The Web pages may be described by list or by an expression that describes all of the URIs included in the claim.

#### NOTE

Web-based products that do not have a URI prior to installation on the customer's Web site may have a statement that the product would conform when installed.

5. A list of the [Web content technologies relied upon](#).

#### NOTE

If a conformance logo is used, it would constitute a claim and must be accompanied by the required components of a conformance claim listed above.

### 5.3.2 Optional Components of a Conformance Claim

§

In addition to the required components of a conformance claim above, consider providing additional information to assist users. Recommended additional information includes:

- A list of success criteria beyond the level of conformance claimed that have been met. This information should be provided in a form that users can use, preferably machine-readable metadata.
- A list of the specific technologies that are "*used but not relied upon.*"
- A list of user agents, including assistive technologies that were used to test the content.
- A list of specific accessibility characteristics of the content, provided in machine-readable metadata.
- Information about any additional steps taken that go beyond the success criteria to enhance accessibility.
- A machine-readable metadata version of the list of specific technologies that are relied upon.
- A machine-readable metadata version of the conformance claim.

#### NOTE

Refer to [Understanding Conformance Claims](#) for more information and example conformance claims.

#### NOTE

Refer to [Understanding Metadata](#) for more information about the use of metadata in conformance claims.

### 5.4 Statement of Partial Conformance - Third Party Content

§

Sometimes, Web pages are created that will later have additional content added to them. For example, an email program, a blog, an article that allows users to add comments, or applications supporting user-contributed content. Another example would be a page, such as a portal or news site, composed of content aggregated from multiple contributors, or sites that automatically insert content from other sources over time, such as when advertisements are inserted dynamically.

In these cases, it is not possible to know at the time of original posting what the uncontrolled content of the pages will be. It is important to note that the uncontrolled content can affect the accessibility of the controlled content as well. Two options are available:

1. A determination of conformance can be made based on best knowledge. If a page of this type is monitored and repaired (non-conforming content is removed or brought into conformance) within two business days, then a determination or claim of conformance can be made since, except for errors in externally contributed content which are corrected or removed when encountered, the page conforms. No conformance claim can be made if it is not possible to monitor or correct non-conforming content;

**OR**

2. A "statement of partial conformance" may be made that the page does not conform, but could conform if certain parts were removed. The form of that statement would be, "This page does not conform, but would conform to WCAG 2.1 at level X if the following parts from uncontrolled sources were removed." In addition, the following would also be true of uncontrolled content that is described in the statement of partial conformance:

1. It is not content that is under the author's control.
2. It is described in a way that users can identify (e.g., they cannot be described as "all parts that we do not control" unless they are clearly marked as such.)

## 5.5 Statement of Partial Conformance - Language

§

A "statement of partial conformance due to language" may be made when the page does not conform, but would conform if [accessibility support](#) existed for (all of) the language(s) used on the page. The form of that statement would be, "This page does not conform, but would conform to WCAG 2.1 at level X if accessibility support existed for the following language(s):"

## 6. Glossary

§

### ***abbreviation***

shortened form of a word, phrase, or name where the abbreviation has not become part of the language

**NOTE**

This includes initialisms and acronyms where:

1. **initialisms** are shortened forms of a name or phrase made from the initial letters of words or syllables contained in that name or phrase

**NOTE**

Not defined in all languages.

SNCF is a French initialism that contains the initial letters of the Société Nationale des Chemins de Fer, the French national railroad.

ESP is an initialism for extrasensory perception.

2. **acronyms** are abbreviated forms made from the initial letters or parts of other words (in a name or phrase) which may be pronounced as a word

NOAA is an acronym made from the initial letters of the National Oceanic and Atmospheric Administration in the United States.

**NOTE**

Some companies have adopted what used to be an initialism as their company name. In these cases, the new name of the company is the letters (for example, Ecma) and the word is no longer considered an abbreviation.

***accessibility supported***

supported by users' [assistive technologies](#) as well as the accessibility features in browsers and other [user agents](#)

To qualify as an accessibility-supported use of a Web content technology (or feature of a technology), both 1 and 2 must be satisfied for a Web content technology (or feature):

1. **The way that the [Web content technology](#) is used must be supported by users' assistive technology (AT).** This means that the way that the technology is used has been tested for interoperability with users' assistive technology in the [human language\(s\)](#) of the content,

**AND**

2. **The Web content technology must have accessibility-supported user agents that are available to users.** This means that at least one of the following four statements is true:

1. The technology is supported natively in widely-distributed user agents that are also accessibility supported (such as HTML and CSS);

**OR**

2. The technology is supported in a widely-distributed plug-in that is also accessibility supported;

**OR**

3. The content is available in a closed environment, such as a university or corporate network, where the user agent required by the technology and used by the organization is also accessibility supported;

**OR**

4. The user agent(s) that support the technology are accessibility supported and are available for download or purchase in a way that:
  - does not cost a person with a disability any more than a person without a disability **and**
  - is as easy to find and obtain for a person with a disability as it is for a person without disabilities.

## NOTE

The WCAG Working group and the W3C do not specify which or how much support by assistive technologies there must be for a particular use of a Web technology in order for it to be classified as accessibility supported. (See [Level of Assistive Technology Support Needed for "Accessibility Support"](#).)

## NOTE

Web technologies can be used in ways that are not accessibility supported as long as they are not [relied upon](#) and the page as a whole meets the conformance requirements, including [Conformance Criterion 4](#) and [Conformance Criterion 5](#), are met.

## NOTE

When a [Web Technology](#) is used in a way that is "accessibility supported," it does not imply that the entire technology or all uses of the technology are supported. Most technologies, including HTML, lack support for at least one feature or use. Pages conform to WCAG only if the uses of the technology that are accessibility supported can be relied upon to meet WCAG requirements.

## NOTE

When citing Web content technologies that have multiple versions, the version(s) supported should be specified.

## NOTE

One way for authors to locate uses of a technology that are accessibility supported would be to consult compilations of uses that are documented to be accessibility supported. (See [Understanding Accessibility-Supported Web Technology Uses](#).) Authors, companies, technology vendors, or others may document accessibility-supported ways of using Web content technologies. However, all ways of using technologies in the documentation would need to meet the definition of accessibility-supported Web content technologies above.

### ***alternative for time-based media***

document including correctly sequenced text descriptions of time-based visual and auditory information and providing a means for achieving the outcomes of any time-based interaction

**NOTE**

A screenplay used to create the synchronized media content would meet this definition only if it was corrected to accurately represent the final synchronized media after editing.

***ambiguous to users in general***

the purpose cannot be determined from the link and all information of the Web page presented to the user simultaneously with the link (i.e., readers without disabilities would not know what a link would do until they activated it)

The word guava in the following sentence "One of the notable exports is guava" is a link. The link could lead to a definition of guava, a chart listing the quantity of guava exported or a photograph of people harvesting guava. Until the link is activated, all readers are unsure and the person with a disability is not at any disadvantage.

***ASCII art***

picture created by a spatial arrangement of characters or glyphs (typically from the 95 printable characters defined by ASCII)

***assistive technology (as used in this document)***

hardware and/or software that acts as a [user agent](#), or along with a mainstream user agent, to provide functionality to meet the requirements of users with disabilities that go beyond those offered by mainstream user agents

**NOTE**

functionality provided by assistive technology includes alternative presentations (e.g., as synthesized speech or magnified content), alternative input methods (e.g., voice), additional navigation or orientation mechanisms, and content transformations (e.g., to make tables more accessible).

**NOTE**

Assistive technologies often communicate data and messages with mainstream user agents by using and monitoring APIs.

## NOTE

The distinction between mainstream user agents and assistive technologies is not absolute. Many mainstream user agents provide some features to assist individuals with disabilities. The basic difference is that mainstream user agents target broad and diverse audiences that usually include people with and without disabilities. Assistive technologies target narrowly defined populations of users with specific disabilities. The assistance provided by an assistive technology is more specific and appropriate to the needs of its target users. The mainstream user agent may provide important functionality to assistive technologies like retrieving Web content from program objects or parsing markup into identifiable bundles.

Assistive technologies that are important in the context of this document include the following:

- screen magnifiers, and other visual reading assistants, which are used by people with visual, perceptual and physical print disabilities to change text font, size, spacing, color, synchronization with speech, etc. in order to improve the visual readability of rendered text and images;
- screen readers, which are used by people who are blind to read textual information through synthesized speech or braille;
- text-to-speech software, which is used by some people with cognitive, language, and learning disabilities to convert text into synthetic speech;
- speech recognition software, which may be used by people who have some physical disabilities;
- alternative keyboards, which are used by people with certain physical disabilities to simulate the keyboard (including alternate keyboards that use head pointers, single switches, sip/puff and other special input devices.);
- alternative pointing devices, which are used by people with certain physical disabilities to simulate mouse pointing and button activations.

### ***audio***

the technology of sound reproduction

**NOTE**

Audio can be created synthetically (including speech synthesis), recorded from real world sounds, or both.

***audio description***

narration added to the soundtrack to describe important visual details that cannot be understood from the main soundtrack alone

**NOTE**

Audio description of [video](#) provides information about actions, characters, scene changes, on-screen text, and other visual content.

**NOTE**

In standard audio description, narration is added during existing pauses in dialogue. (See also [extended audio description](#).)

**NOTE**

Where all of the [video](#) information is already provided in existing [audio](#), no additional audio description is necessary.

**NOTE**

Also called "video description" and "descriptive narration."

***audio-only***

a time-based presentation that contains only [audio](#) (no [video](#) and no interaction)

***blinking***

switch back and forth between two visual states in a way that is meant to draw attention

**NOTE**

See also [flash](#). It is possible for something to be large enough and blink brightly enough at the right frequency to be also classified as a flash.

***blocks of text***

more than one sentence of text

***CAPTCHA***

initialism for "Completely Automated Public Turing test to tell Computers and Humans Apart"

**NOTE**

CAPTCHA tests often involve asking the user to type in text that is displayed in an obscured image or audio file.

**NOTE**

A Turing test is any system of tests designed to differentiate a human from a computer. It is named after famed computer scientist Alan Turing. The term was coined by researchers at Carnegie Mellon University.

***captions***

synchronized visual and/or [text alternative](#) for both speech and non-speech audio information needed to understand the media content

**NOTE**

Captions are similar to dialogue-only subtitles except captions convey not only the content of spoken dialogue, but also equivalents for non-dialogue audio information needed to understand the program content, including sound effects, music, laughter, speaker identification and location.

**NOTE**

Closed Captions are equivalents that can be turned on and off with some players.

**NOTE**

Open Captions are any captions that cannot be turned off. For example, if the captions are visual equivalent [images of text](#) embedded in [video](#).

**NOTE**

Captions should not obscure or obstruct relevant information in the video.

**NOTE**

In some countries, captions are called subtitles.

**NOTE**

[Audio descriptions](#) can be, but do not need to be, captioned since they are descriptions of information that is already presented visually.

***changes of context***

major changes in the content of the [Web page](#) that, if made without user awareness, can disorient users who are not able to view the entire page simultaneously

Changes in context include changes of:

1. [user agent](#);
2. [viewport](#);
3. focus;
4. [content](#) that changes the meaning of the [Web page](#)

## NOTE

A change of content is not always a change of context. Changes in content, such as an expanding outline, dynamic menu, or a tab control do not necessarily change the context, unless they also change one of the above (e.g., focus).

Opening a new window, moving focus to a different component, going to a new page (including anything that would look to a user as if they had moved to a new page) or significantly re-arranging the content of a page are examples of changes of context.

### ***conformance***

satisfying all the requirements of a given standard, guideline or specification

### ***conforming alternate version***

version that

1. conforms at the designated level, and
2. provides all of the same information and functionality in the same human language, and
3. is as up to date as the non-conforming content, and
4. for which at least one of the following is true:
  1. the conforming version can be reached from the non-conforming page via an accessibility-supported mechanism, or
  2. the non-conforming version can only be reached from the conforming version, or
  3. the non-conforming version can only be reached from a conforming page that also provides a mechanism to reach the conforming version

## NOTE

In this definition, "can only be reached" means that there is some mechanism, such as a conditional redirect, that prevents a user from "reaching" (loading) the non-conforming page unless the user had just come from the conforming version.

## NOTE

The alternate version does not need to be matched page for page with the original (e.g., the conforming alternate version may consist of multiple pages).

## NOTE

If multiple language versions are available, then conforming alternate versions are required for each language offered.

## NOTE

Alternate versions may be provided to accommodate different technology environments or user groups. Each version should be as conformant as possible. One version would need to be fully conformant in order to meet [conformance requirement 1](#).

## NOTE

The conforming alternative version does not need to reside within the scope of conformance, or even on the same Web site, as long as it is as freely available as the non-conforming version.

## NOTE

Alternate versions should not be confused with [supplementary content](#), which support the original page and enhance comprehension.

## NOTE

Setting user preferences within the content to produce a conforming version is an acceptable mechanism for reaching another version as long as the method used to set the preferences is accessibility supported.

See [Understanding Conforming Alternate Versions](#)

**content (Web content)**

information and sensory experience to be communicated to the user by means of a [user agent](#), including code or markup that defines the content's [structure](#), [presentation](#), and interactions

**context-sensitive help**

help text that provides information related to the function currently being performed

**NOTE**

Clear labels can act as context-sensitive help.

**contrast ratio**

$(L1 + 0.05) / (L2 + 0.05)$ , where

- L1 is the [relative luminance](#) of the lighter of the colors, and
- L2 is the [relative luminance](#) of the darker of the colors.

**NOTE**

Contrast ratios can range from 1 to 21 (commonly written 1:1 to 21:1).

**NOTE**

Because authors do not have control over user settings as to how text is rendered (for example font smoothing or anti-aliasing), the contrast ratio for text can be evaluated with anti-aliasing turned off.

**NOTE**

For the purpose of Success Criteria 1.4.3 and 1.4.6, contrast is measured with respect to the specified background over which the text is rendered in normal usage. If no background color is specified, then white is assumed.

**NOTE**

Background color is the specified color of content over which the text is to be rendered in normal usage. It is a failure if no background color is specified when the text color is specified, because the user's default background color is unknown and cannot be evaluated for sufficient contrast. For the same reason, it is a failure if no text color is specified when a background color is specified.

**NOTE**

When there is a border around the letter, the border can add contrast and would be used in calculating the contrast between the letter and its background. A narrow border around the letter would be used as the letter. A wide border around the letter that fills in the inner details of the letters acts as a halo and would be considered background.

**NOTE**

WCAG conformance should be evaluated for color pairs specified in the content that an author would expect to appear adjacent in typical presentation. Authors need not consider unusual presentations, such as color changes made by the user agent, except where caused by authors' code.

***correct reading sequence***

any sequence where words and paragraphs are presented in an order that does not change the meaning of the content

***CSS pixel***

visual angle of about 0.0213 degrees

A CSS pixel is the canonical unit of measure for all lengths and measurements in CSS. This unit is density-independent, and distinct from actual hardware pixels present in a display. User agents and operating systems should ensure that a CSS pixel is set as closely as possible to the [CSS Values and Units Module Level 3 reference pixel \[css3-values\]](#), which takes into account the physical dimensions of the display and the assumed viewing distance (factors that cannot be determined by content authors).

***down-event***

platform event that occurs when the trigger stimulus of a pointer is depressed

The down-event may have different names on different platforms, such as "touchstart" or "mousedown".

***emergency***

a sudden, unexpected situation or occurrence that requires immediate action to preserve health, safety, or property

***essential***

if removed, would fundamentally change the information or functionality of the content, **and** information and functionality cannot be achieved in another way that would conform

***extended audio description***

audio description that is added to an audiovisual presentation by pausing the [video](#) so that there is time to add additional description

**NOTE**

This technique is only used when the sense of the [video](#) would be lost without the additional [audio description](#) and the pauses between dialogue/narration are too short.

***flash***

a pair of opposing changes in [relative luminance](#) that can cause seizures in some people if it is large enough and in the right frequency range

**NOTE**

See [general flash and red flash thresholds](#) for information about types of flash that are not allowed.

**NOTE**

See also [blinking](#).

***functionality***

[processes](#) and outcomes achievable through user action

***general flash and red flash thresholds***

a [flash](#) or rapidly changing image sequence is below the threshold (i.e., content **passes**) if any of the following are true:

1. there are no more than three **general flashes** and / or no more than three **red flashes** within any one-second period; or
2. the combined area of flashes occurring concurrently occupies no more than a total of .006 steradians within any 10 degree visual field on the screen (25% of any 10 degree visual field on the screen) at typical viewing distance

where:

- A **general flash** is defined as a pair of opposing changes in [relative luminance](#) of 10% or more of the maximum relative luminance where the relative luminance of the darker image is below 0.80; and where "a pair of opposing changes" is an increase followed by a decrease, or a decrease followed by an increase, and
- A **red flash** is defined as any pair of opposing transitions involving a saturated red

*Exception:* Flashing that is a fine, balanced, pattern such as white noise or an alternating checkerboard pattern with "squares" smaller than 0.1 degree (of visual field at typical viewing distance) on a side does not violate the thresholds.

#### NOTE

For general software or Web content, using a 341 x 256 pixel rectangle anywhere on the displayed screen area when the content is viewed at 1024 x 768 pixels will provide a good estimate of a 10 degree visual field for standard screen sizes and viewing distances (e.g., 15-17 inch screen at 22-26 inches). (Higher resolutions displays showing the same rendering of the content yield smaller and safer images so it is lower resolutions that are used to define the thresholds.)

#### NOTE

A transition is the change in relative luminance (or relative luminance/color for red flashing) between adjacent peaks and valleys in a plot of relative luminance (or relative luminance/color for red flashing) measurement against time. A flash consists of two opposing transitions.

**NOTE**

The current working definition in the field for "**pair of opposing transitions involving a saturated red**" is where, for either or both states involved in each transition,  $R/(R + G + B) \geq 0.8$ , and the change in the value of  $(R-G-B) \times 320$  is  $> 20$  (negative values of  $(R-G-B) \times 320$  are set to zero) for both transitions. R, G, B values range from 0-1 as specified in "relative luminance" definition. [[HARDING-BINNIE](#)]

**NOTE**

Tools are available that will carry out analysis from video screen capture. However, no tool is necessary to evaluate for this condition if flashing is less than or equal to 3 flashes in any one second. Content automatically passes (see #1 and #2 above).

***human language***

language that is spoken, written or signed (through visual or tactile means) to communicate with humans

**NOTE**

See also [sign language](#).

***idiom***

phrase whose meaning cannot be deduced from the meaning of the individual words and the specific words cannot be changed without losing the meaning

**NOTE**

idioms cannot be translated directly, word for word, without losing their (cultural or language-dependent) meaning.

In English, "spilling the beans" means "revealing a secret." However, "knocking over the beans" or "spilling the vegetables" does not mean the same thing.

In Japanese, the phrase "さじを投げる" literally translates into "he throws a spoon," but it means that there is nothing he can do and finally he gives up.

In Dutch, "Hij ging met de kippen op stok" literally translates into "He went to roost with the chickens," but it means that he went to bed early.

### ***image of text***

text that has been rendered in a non-text form (e.g., an image) in order to achieve a particular visual effect

#### **NOTE**

This does not include [text](#) that is part of a picture that contains significant other visual content.

A person's name on a nametag in a photograph.

### ***informative***

for information purposes and not required for conformance

#### **NOTE**

Content required for [conformance](#) is referred to as "[normative](#)."

### ***input error***

information provided by the user that is not accepted

#### **NOTE**

This includes:

1. Information that is required by the [Web page](#) but omitted by the user
2. Information that is provided by the user but that falls outside the required data format or values

### ***jargon***

words used in a particular way by people in a particular field

The word StickyKeys is jargon from the field of assistive technology/accessibility.

### ***keyboard interface***

interface used by software to obtain keystroke input

#### NOTE

A keyboard interface allows users to provide keystroke input to programs even if the native technology does not contain a keyboard.

#### NOTE

A touchscreen PDA has a keyboard interface built into its operating system as well as a connector for external keyboards. Applications on the PDA can use the interface to obtain keyboard input either from an external keyboard or from other applications that provide simulated keyboard output, such as handwriting interpreters or speech-to-text applications with "keyboard emulation" functionality.

#### NOTE

Operation of the application (or parts of the application) through a keyboard-operated mouse emulator, such as MouseKeys, does not qualify as operation through a keyboard interface because operation of the program is through its pointing device interface, not through its keyboard interface.

### ***keyboard shortcut***

alternative means of triggering an action by the pressing of one or more keys

### ***label***

[text](#) or other component with a [text alternative](#) that is presented to a user to identify a component within Web [content](#)

#### NOTE

A label is presented to all users whereas the [name](#) may be hidden and only exposed by assistive technology. In many (but not all) cases the name and the label are the same.

**NOTE**

The term label is not limited to the label element in HTML.

***large scale (text)***

with at least 18 point or 14 point bold or font size that would yield equivalent size for Chinese, Japanese and Korean (CJK) fonts

**NOTE**

Fonts with extraordinarily thin strokes or unusual features and characteristics that reduce the familiarity of their letter forms are harder to read, especially at lower contrast levels.

**NOTE**

Font size is the size when the content is delivered. It does not include resizing that may be done by a user.

**NOTE**

The actual size of the character that a user sees is dependent both on the author-defined size and the user's display or user-agent settings. For many mainstream body text fonts, 14 and 18 point is roughly equivalent to 1.2 and 1.5 em or to 120% or 150% of the default size for body text (assuming that the body font is 100%), but authors would need to check this for the particular fonts in use. When fonts are defined in relative units, the actual point size is calculated by the user agent for display. The point size should be obtained from the user agent, or calculated based on font metrics as the user agent does, when evaluating this success criterion. Users who have low vision would be responsible for choosing appropriate settings.

**NOTE**

When using text without specifying the font size, the smallest font size used on major browsers for unspecified text would be a reasonable size to assume for the font. If a level 1 heading is rendered in 14pt bold or higher on major browsers, then it would be reasonable to assume it is large text. Relative scaling can be calculated from the default sizes in a similar fashion.

**NOTE**

The 18 and 14 point sizes for roman texts are taken from the minimum size for large print (14pt) and the larger standard font size (18pt). For other fonts such as CJK languages, the "equivalent" sizes would be the minimum large print size used for those languages and the next larger standard large print size.

***legal commitments***

transactions where the person incurs a legally binding obligation or benefit

A marriage license, a stock trade (financial and legal), a will, a loan, adoption, signing up for the army, a contract of any type, etc.

***link purpose***

nature of the result obtained by activating a hyperlink

***live***

information captured from a real-world event and transmitted to the receiver with no more than a broadcast delay

**NOTE**

A broadcast delay is a short (usually automated) delay, for example used in order to give the broadcaster time to cue or censor the audio (or video) feed, but not sufficient to allow significant editing.

**NOTE**

If information is completely computer generated, it is not live.

***lower secondary education level***

the two or three year period of education that begins after completion of six years of school and ends nine years after the beginning of [primary education](#)

**NOTE**

This definition is based on the International Standard Classification of Education [[UNESCO](#)].

***mechanism***

[process](#) or technique for achieving a result

**NOTE**

The mechanism may be explicitly provided in the content, or may be [relied upon](#) to be provided by either the platform or by [user agents](#), including [assistive technologies](#).

**NOTE**

The mechanism needs to meet all success criteria for the conformance level claimed.

***media alternative for text***

media that presents no more information than is already presented in text (directly or via text alternatives)

**NOTE**

A media alternative for text is provided for those who benefit from alternate representations of text. Media alternatives for text may be audio-only, video-only (including sign-language video), or audio-video.

***motion animation***

addition of steps between conditions to create the illusion of movement or to give a sense of a smooth transition

For example, an element which moves into place or changes size while appearing is considered to be animated. An element which appears instantly without transitioning is not using animation. Motion animation does not include changes of color, blurring or opacity.

### ***name***

text by which software can identify a component within Web content to the user

#### NOTE

The name may be hidden and only exposed by assistive technology, whereas a [label](#) is presented to all users. In many (but not all) cases, the label and the name are the same.

#### NOTE

This is unrelated to the name attribute in HTML.

### ***navigated sequentially***

navigated in the order defined for advancing focus (from one element to the next) using a [keyboard interface](#)

### ***non-text content***

any content that is not a sequence of characters that can be [programmatically determined](#) or where the sequence is not expressing something in [human language](#)

#### NOTE

This includes [ASCII Art](#) (which is a pattern of characters), emoticons, leetspeak (which uses character substitution), and images representing text

### ***normative***

required for conformance

**NOTE**

One may conform in a variety of well-defined ways to this document.

**NOTE**

Content identified as "[informative](#)" or "non-normative" is never required for [conformance](#).

***on a full-screen window***

on the most common sized desktop/laptop display with the viewport maximized

**NOTE**

Since people generally keep their computers for several years, it is best not to rely on the latest desktop/laptop display resolutions but to consider the common desktop/laptop display resolutions over the course of several years when making this evaluation.

***paused***

stopped by user request and not resumed until requested by user

***pointer input***

input device that can target a specific coordinate (or set of coordinates) on a screen, such as a mouse, pen, or touch contact

See also [Pointer Events pointer definition](#) [[pointerevents](#)].

***prerecorded***

information that is not [live](#)

***presentation***

rendering of the [content](#) in a form to be perceived by users

***primary education level***

six year time period that begins between the ages of five and seven, possibly without any previous education

**NOTE**

This definition is based on the International Standard Classification of Education [UNESCO].

***process***

series of user actions where each action is required in order to complete an activity

Successful use of a series of Web pages on a shopping site requires users to view alternative products, prices and offers, select products, submit an order, provide shipping information and provide payment information.

An account registration page requires successful completion of a Turing test before the registration form can be accessed.

***programmatically determined (programmatically determinable)***

determined by software from author-supplied data provided in a way that different [user agents](#), including [assistive technologies](#), can extract and present this information to users in different modalities

**NOTE**

Determined in a markup language from elements and attributes that are accessed directly by commonly available assistive technology.

**NOTE**

Determined from technology-specific data structures in a non-markup language and exposed to assistive technology via an accessibility API that is supported by commonly available assistive technology.

***programmatically determined link context***

additional information that can be [programmatically determined](#) from [relationships](#) with a link, combined with the link text, and presented to users in different modalities

In HTML, information that is programmatically determinable from a link in English includes text that is in the same paragraph, list, or table cell as the link or in a table header cell that is associated with the table cell that contains the link.

#### NOTE

Since screen readers interpret punctuation, they can also provide the context from the current sentence, when the focus is on a link in that sentence.

#### ***programmatically set***

set by software using methods that are supported by user agents, including assistive technologies

#### ***pure decoration***

serving only an aesthetic purpose, providing no information, and having no functionality

#### NOTE

Text is only purely decorative if the words can be rearranged or substituted without changing their purpose.

The cover page of a dictionary has random words in very light text in the background.

#### ***real-time event***

event that a) occurs at the same time as the viewing and b) is not completely generated by the content

A Webcast of a live performance (occurs at the same time as the viewing and is not prerecorded).

An on-line auction with people bidding (occurs at the same time as the viewing).

Live humans interacting in a virtual world using avatars (is not completely generated by the content and occurs at the same time as the viewing).

#### ***region***

perceivable, programmatically determined section of content

**NOTE**

In HTML, any area designated with a landmark role would be a region.

***relationships***

meaningful associations between distinct pieces of content

***relative luminance***

the relative brightness of any point in a colorspace, normalized to 0 for darkest black and 1 for lightest white

**NOTE**

For the sRGB colorspace, the relative luminance of a color is defined as  $L = 0.2126 * \mathbf{R} + 0.7152 * \mathbf{G} + 0.0722 * \mathbf{B}$  where **R**, **G** and **B** are defined as:

- if  $R_{sRGB} \leq 0.03928$  then  $\mathbf{R} = R_{sRGB}/12.92$  else  $\mathbf{R} = ((R_{sRGB}+0.055)/1.055) ^{2.4}$
- if  $G_{sRGB} \leq 0.03928$  then  $\mathbf{G} = G_{sRGB}/12.92$  else  $\mathbf{G} = ((G_{sRGB}+0.055)/1.055) ^{2.4}$
- if  $B_{sRGB} \leq 0.03928$  then  $\mathbf{B} = B_{sRGB}/12.92$  else  $\mathbf{B} = ((B_{sRGB}+0.055)/1.055) ^{2.4}$

and  $R_{sRGB}$ ,  $G_{sRGB}$ , and  $B_{sRGB}$  are defined as:

- $R_{sRGB} = R_{8bit}/255$
- $G_{sRGB} = G_{8bit}/255$
- $B_{sRGB} = B_{8bit}/255$

The "^" character is the exponentiation operator. (Formula taken from [\[sRGB\]](#) and [\[IEC-4WD\]](#)).

**NOTE**

Almost all systems used today to view Web content assume sRGB encoding. Unless it is known that another color space will be used to process and display the content, authors should evaluate using sRGB colorspace. If using other color spaces, see [Understanding Success Criterion 1.4.3](#).

**NOTE**

If dithering occurs after delivery, then the source color value is used. For colors that are dithered at the source, the average values of the colors that are dithered should be used (average R, average G, and average B).

**NOTE**

Tools are available that automatically do the calculations when testing contrast and flash.

**NOTE**

A [MathML version of the relative luminance definition](#) is available.

***relied upon (technologies that are)***

the content would not [conform](#) if that [technology](#) is turned off or is not supported

***role***

text or number by which software can identify the function of a component within Web content

A number that indicates whether an image functions as a hyperlink, command button, or check box.

***same functionality***

same result when used

A submit "search" button on one Web page and a "find" button on another Web page may both have a field to enter a term and list topics in the Web site related to the term submitted. In this case, they would have the same functionality but would not be labeled consistently.

***same relative order***

same position relative to other items

**NOTE**

Items are considered to be in the same relative order even if other items are inserted or removed from the original order. For example, expanding navigation menus may insert an additional level of detail or a secondary navigation section may be inserted into the reading order.

***satisfies a success criterion***

the success criterion does not evaluate to 'false' when applied to the page

***section***

a self-contained portion of written content that deals with one or more related topics or thoughts

**NOTE**

A section may consist of one or more paragraphs and include graphics, tables, lists and sub-sections.

***set of web pages***

collection of [web pages](#) that share a common purpose and that are created by the same author, group or organization

Examples include a publication which is split across multiple Web pages, where each page contains one chapter or other significant section of the work. The publication is logically a single contiguous unit, and contains navigation features that enable access to the full set of pages.

**NOTE**

Different language versions would be considered different sets of Web pages.

***sign language***

a language using combinations of movements of the hands and arms, facial expressions, or body positions to convey meaning

***sign language interpretation***

translation of one language, generally a spoken language, into a [sign language](#)

**NOTE**

True sign languages are independent languages that are unrelated to the spoken language(s) of the same country or region.

***single pointer***

pointer input that operates with one point of contact with the screen, including single taps and clicks, double-taps and clicks, long presses, and path-based gestures

***specific sensory experience***

a sensory experience that is not purely decorative and does not primarily convey important information or perform a function

Examples include a performance of a flute solo, works of visual art etc.

***state***

dynamic property expressing characteristics of a user interface component that may change in response to user action or automated processes

States do not affect the nature of the component, but represent data associated with the component or user interaction possibilities. Examples include focus, hover, select, press, check, visited/unvisited, and expand/collapse.

***status message***

change in content that is not a [change of context](#), and that provides information to the user on the success or results of an action, on the waiting state of an application, on the progress of a process, or on the existence of errors

***structure***

1. The way the parts of a [Web page](#) are organized in relation to each other; and
2. The way a collection of [Web pages](#) is organized

***style property***

property whose value determines the presentation (e.g. font, color, size, location, padding, volume, synthesized speech prosody) of content elements as they are rendered (e.g. onscreen, via loudspeaker, via braille display) by user agents

Style properties can have several origins:

- User agent default styles: The default style property values applied in the absence of any author or user styles. Some web content technologies specify a default rendering, others do not;
- Author styles: Style property values that are set by the author as part of the content (e.g. in-line styles, author style sheets);
- User styles: Style property values that are set by the user (e.g. via user agent interface settings, user style sheets)

***supplemental content***

additional [content](#) that illustrates or clarifies the primary content

An audio version of a [Web page](#).

An illustration of a complex [process](#).

A paragraph summarizing the major outcomes and recommendations made in a research study.

***synchronized media***

[audio](#) or [video](#) synchronized with another format for presenting information and/or with time-based interactive components, unless the media is a [media alternative for text](#) that is clearly labeled as such

***target***

region of the display that will accept a pointer action, such as the interactive area of a user interface component

**NOTE**

If two or more touch targets are overlapping, the overlapping area should not be included in the measurement of the target size, except when the overlapping targets perform the same action or open the same page.

***technology (Web content)***

[mechanism](#) for encoding instructions to be rendered, played or executed by [user agents](#)

**NOTE**

As used in these guidelines "Web Technology" and the word "technology" (when used alone) both refer to Web Content Technologies.

**NOTE**

Web content technologies may include markup languages, data formats, or programming languages that authors may use alone or in combination to create end-user experiences that range from static Web pages to synchronized media presentations to dynamic Web applications.

**NOTE**

Some common examples of Web content technologies include HTML, CSS, SVG, PNG, PDF, Flash, and JavaScript.

***text***

sequence of characters that can be [programmatically determined](#), where the sequence is expressing something in [human language](#)

***text alternative***

[Text](#) that is programmatically associated with [non-text content](#) or referred to from text that is programmatically associated with non-text content. Programmatically associated text is text whose location can be programmatically determined from the non-text content.

An image of a chart is described in text in the paragraph after the chart. The short text alternative for the chart indicates that a description follows.

**NOTE**

Refer to [Understanding Text Alternatives](#) for more information.

***up-event***

platform event that occurs when the trigger stimulus of a pointer is released

The up-event may have different names on different platforms, such as "touchend" or "mouseup".

***used in an unusual or restricted way***

words used in such a way that requires users to know exactly which definition to apply in order to understand the content correctly

The term "gig" means something different if it occurs in a discussion of music concerts than it does in article about computer hard drive space, but the appropriate definition can be determined from context. By contrast, the word "text" is used in a very specific way in WCAG 2.1, so a definition is supplied in the glossary.

***user agent***

any software that retrieves and presents Web content for users

Web browsers, media players, plug-ins, and other programs — including [assistive technologies](#) — that help in retrieving, rendering, and interacting with Web content.

***user-controllable***

data that is intended to be accessed by users

**NOTE**

This does not refer to such things as Internet logs and search engine monitoring data.

Name and address fields for a user's account.

***user interface component***

a part of the content that is perceived by users as a single control for a distinct function

**NOTE**

Multiple user interface components may be implemented as a single programmatic element. Components here is not tied to programming techniques, but rather to what the user perceives as separate controls.

**NOTE**

User interface components include form elements and links as well as components generated by scripts.

**NOTE**

What is meant by "component" or "user interface component" here is also sometimes called "user interface element".

An applet has a "control" that can be used to move through content by line or page or random access. Since each of these would need to have a name and be settable independently, they would each be a "user interface component."

***user inactivity***

any continuous period of time where no user actions occur

The method of tracking will be determined by the web site or application.

***video***

the technology of moving or sequenced pictures or images

**NOTE**

Video can be made up of animated or photographic images, or both.

***video-only***

a time-based presentation that contains only [video](#) (no [audio](#) and no interaction)

***viewport***

object in which the user agent presents content

**NOTE**

The [user agent](#) presents content through one or more viewports. Viewports include windows, frames, loudspeakers, and virtual magnifying glasses. A viewport may contain another viewport (e.g., nested frames). Interface components created by the user agent such as prompts, menus, and alerts are not viewports.

**NOTE**

This definition is based on [User Agent Accessibility Guidelines 1.0 Glossary \[UAAG10\]](#).

***visually customized***

the font, size, color, and background can be set

***Web page***

a non-embedded resource obtained from a single URI using HTTP plus any other resources that are used in the rendering or intended to be rendered together with it by a [user agent](#)

**NOTE**

Although any "other resources" would be rendered together with the primary resource, they would not necessarily be rendered simultaneously with each other.

**NOTE**

For the purposes of conformance with these guidelines, a resource must be "non-embedded" within the scope of conformance to be considered a Web page.

A Web resource including all embedded images and media.

A Web mail program built using Asynchronous JavaScript and XML (AJAX). The program lives entirely at <http://example.com/mail>, but includes an inbox, a contacts area and a calendar. Links or buttons are provided that cause the inbox, contacts, or calendar to display, but do not change the URI of the page as a whole.

A customizable portal site, where users can choose content to display from a set of different content modules.

When you enter "http://shopping.example.com/" in your browser, you enter a movie-like interactive shopping environment where you visually move around in a store dragging products off of the shelves around you and into a visual shopping cart in front of you. Clicking on a product causes it to be demonstrated with a specification sheet floating alongside. This might be a single-page Web site or just one page within a Web site.

## 7. Input Purposes for User Interface Components

§

This section contains a listing of common [user interface component](#) input purposes. The terms below are not keywords that must be used, but instead represent purposes that must be captured in the taxonomy adopted by a webpage. Where applicable, authors mark up controls with the chosen taxonomy to indicate the semantic purpose. This provides the potential for user agents and assistive technologies to apply personalized presentations that can enable more people to understand and use the content.

### NOTE

The list of input type purposes is based on the control purposes defined in the [HTML 5.2 Autofill field section](#), but it is important to understand that a different technology may have some or all of the same concepts defined in its specification and only the concepts that are mapped to the meanings below are required.

The following input control purposes are intended to relate to the user of the content and pertain only to information related to that individual.

- **name** - Full name
- **honorific-prefix** - Prefix or title (e.g., "Mr.", "Ms.", "Dr.", "M<sup>lle</sup>")
- **given-name** - Given name (in some Western cultures, also known as the *first name*)
- **additional-name** - Additional names (in some Western cultures, also known as *middle names*, forenames other than the first name)
- **family-name** - Family name (in some Western cultures, also known as the *last name* or *surname*)
- **honorific-suffix** - Suffix (e.g., "Jr.", "B.Sc.", "MBASW", "II")

- **nickname** - Nickname, screen name, handle: a typically short name used instead of the full name
- **organization-title** - Job title (e.g., "Software Engineer", "Senior Vice President", "Deputy Managing Director")
- **username** - A username
- **new-password** - A new password (e.g., when creating an account or changing a password)
- **current-password** - The current password for the account identified by the **username** field (e.g., when logging in)
- **organization** - Company name corresponding to the person, address, or contact information in the other fields associated with this field
- **street-address** - Street address (multiple lines, newlines preserved)
- **address-line1** - Street address (one line per field, line 1)
- **address-line2** - Street address (one line per field, line 2)
- **address-line3** - Street address (one line per field, line 3)
- **address-level4** - The most fine-grained administrative level, in addresses with four administrative levels
- **address-level3** - The third administrative level, in addresses with three or more administrative levels
- **address-level2** - The second administrative level, in addresses with two or more administrative levels; in the countries with two administrative levels, this would typically be the city, town, village, or other locality within which the relevant street address is found
- **address-level1** - The broadest administrative level in the address, i.e., the province within which the locality is found; for example, in the US, this would be the state; in Switzerland it would be the canton; in the UK, the post town
- **country** - Country code
- **country-name** - Country name
- **postal-code** - Postal code, post code, ZIP code, CEDEX code (if CEDEX, append "CEDEX", and the *dissement*, if relevant, to the **address-level2** field)
- **cc-name** - Full name as given on the payment instrument
- **cc-given-name** - Given name as given on the payment instrument (in some Western cultures, also known as the *first name*)
- **cc-additional-name** - Additional names given on the payment instrument (in some Western cultures, also known as *middle names*, forenames other than the first name)

- **cc-family-name** - Family name given on the payment instrument (in some Western cultures, also known as the *last name* or *surname*)
- **cc-number** - Code identifying the payment instrument (e.g., the credit card number)
- **cc-exp** - Expiration date of the payment instrument
- **cc-exp-month** - Month component of the expiration date of the payment instrument
- **cc-exp-year** - Year component of the expiration date of the payment instrument
- **cc-csc** - Security code for the payment instrument (also known as the card security code (CSC), card validation code (CVC), card verification value (CVV), signature panel code (SPC), credit card ID (CCID), etc)
- **cc-type** - Type of payment instrument
- **transaction-currency** - The currency that the user would prefer the transaction to use
- **transaction-amount** - The amount that the user would like for the transaction (e.g., when entering a bid or sale price)
- **language** - Preferred language
- **bday** - Birthday
- **bday-day** - Day component of birthday
- **bday-month** - Month component of birthday
- **bday-year** - Year component of birthday
- **sex** - Gender identity (e.g., Female, Fa'afafine)
- **url** - Home page or other Web page corresponding to the company, person, address, or contact information in the other fields associated with this field
- **photo** - Photograph, icon, or other image corresponding to the company, person, address, or contact information in the other fields associated with this field
- **tel** - Full telephone number, including country code
- **tel-country-code** - Country code component of the telephone number
- **tel-national** - Telephone number without the county code component, with a country-internal prefix applied if applicable
- **tel-area-code** - Area code component of the telephone number, with a country-internal prefix applied if applicable
- **tel-local** - Telephone number without the country code and area code components

- **tel-local-prefix** - First part of the component of the telephone number that follows the area code, when that component is split into two components
- **tel-local-suffix** - Second part of the component of the telephone number that follows the area code, when that component is split into two components
- **tel-extension** - Telephone number internal extension code
- **email** - E-mail address
- **impp** - URL representing an instant messaging protocol endpoint (for example, "**aim:goim?screenname=example**" or "**xmpp:fred@example.net**")

## A. Acknowledgments

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Additional information about participation in the Accessibility Guidelines Working Group (AG WG) can be found on the [Working Group home page](#).

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## B. References

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### B.1 Normative references

§

#### [css3-values]

*CSS Values and Units Module Level 3*. Tab Atkins Jr.; Erika Etemad. W3C. 29 September 2016. W3C Candidate Recommendation. URL: <https://www.w3.org/TR/css-values-3/>

#### [pointerevents]

*Pointer Events*. Jacob Rossi; Matt Brubeck. W3C. 24 February 2015. W3C Recommendation. URL: <https://www.w3.org/TR/pointerevents/>

#### [WCAG20]

*Web Content Accessibility Guidelines (WCAG) 2.0*. Ben Caldwell; Michael Cooper; Loretta Guarino Reid; Gregg Vanderheiden et al. W3C. 11 December 2008. W3C Recommendation. URL: <https://www.w3.org/TR/WCAG20/>

### B.2 Informative references

§

#### [HARDING-BINNIE]

*Independent Analysis of the ITC Photosensitive Epilepsy Calibration Test Tape*. Harding G. F. A.; Binnie, C.D..2002.

#### [IEC-4WD]

*IEC/4WD 61966-2-1: Colour Measurement and Management in Multimedia Systems and Equipment - Part 2.1: Default Colour Space - sRGB*. May 5, 1998.

#### [RFC2119]

*Key words for use in RFCs to Indicate Requirement Levels*. S. Bradner. IETF. March 1997. Best Current Practice. URL: <https://tools.ietf.org/html/rfc2119>

#### [sRGB]

*A Standard Default Color Space for the Internet - sRGB, Version 1.10.* M. Stokes; M. Anderson; S. Chandrasekar; R. Motta. November 5, 1996. URL: <https://www.w3.org/Graphics/Color/sRGB.html>

**[UAAG10]**

*User Agent Accessibility Guidelines 1.0.* Ian Jacobs; Jon Gunderson; Eric Hansen. W3C. 17 December 2002. W3C Recommendation. URL: <https://www.w3.org/TR/UAAG10/>

**[UNESCO]**

*International Standard Classification of Education.* 1997. URL: [http://www.unesco.org/education/information/nfsunesco/doc/isced\\_1997.htm](http://www.unesco.org/education/information/nfsunesco/doc/isced_1997.htm)

**[WAI-WEBCONTENT]**

*Web Content Accessibility Guidelines 1.0.* Wendy Chisholm; Gregg Vanderheiden; Ian Jacobs. W3C. 5 May 1999. W3C Recommendation. URL: <https://www.w3.org/TR/WAI-WEBCONTENT/>

