

Guidelines and Examples for Determining the Suitability of an Accessibility Accommodation

Issued March 2009

[See HHS Standard: Accessibility (508) Accommodation]

An accommodation is a means or method outside of Section 508 standards designed to assist users with disabilities in cases where the application of current Section 508 standards is neither feasible nor helpful.

TABLE OF CONTENTS

- Introduction
 - Rationale
 - Exclusions and Limits
 - Excel Computational Spreadsheets
 - Password Protected Sites
 - Third-Party Licensed PDF Documents from Medical and Scientific Journals (and Conference Proceeding Documents)
 - Multilingual PDF Documents Using Non-Western Characters
 - Complex Static Images
 - Example: Anatomy Chart of Wrist and Hand
 - Example: Exploded Views
 - Example: Scientific Diagrams
 - Complex PDF Tables
 - Atypical Tables and Chart Formats
 - Complex Images Supported by Detailed Narratives
 - Dynamic Simulations, Models, and Maps
 - Virtual Environments
 - Scanned Historical Publications/Materials and Optical Character Recognition
 - Example: Virtual Historic Books
 - Example: Historic Handwritten Laboratory Notes and Related Laboratory Historical Materials
-

INTRODUCTION:

Note: This guidance will be re-evaluated annually to take into consideration the impact of new technologies.

This document was created as an adjunct to the HHS Web Standard titled “Accessibility (508) Accommodation”. The content focuses primarily on visual disabilities, with the exception of visual content that could promote seizures. There is no acceptable accommodation principle that would allow for pulsing and fast-flicker graphics. If there is a risk that users could be exposed to hazardous displays, a warning screen should be deployed first.

It is impossible to catalog every instance of electronic information (EI) suitable for an accommodations approach. This document is a guide to the types of EI that can appropriately utilize an accommodation when the information cannot be made accessible using conventional accessibility techniques. An accommodation is a means or method outside of Section 508 standards designed to assist users with disabilities in cases where the application of current Section 508 standards is neither feasible nor helpful. An accommodation only applies to specific items, collections, or applications that fall within the range of EI types outlined herein. However, the occurrence of an accommodation-worthy item does not justify avoiding 508 responsibilities for associated content that can reasonably be made accessible.

The Office of the Secretary (OS) and the Operating Divisions of HHS propose to make the vast collection of HHS EI accessible to everyone. Over the past decade, the progressive use of the Internet has led to the creation of millions of pages, countless files, and sophisticated, interactive EI. This collection touches on almost every aspect of the HHS mission and its programs. As we move forward with the process of finding accessibility solutions for this diverse body of information, staff from across the Department have raised questions about the application of Section 508 standards to information, posing special accessibility challenges.

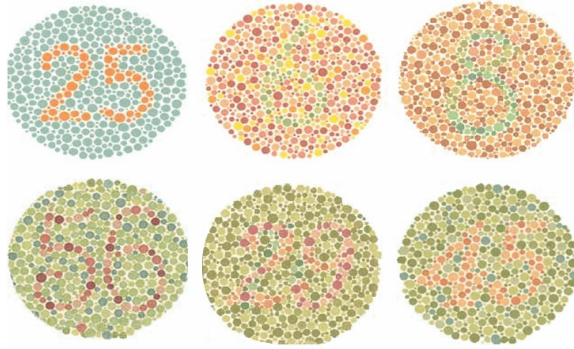
Questions arose because people recognized that applying Section 508 standards has limited effect on producing accessible content. In particular, there were concerns that the rote application of Section 508 standards would fail to achieve accessibility and could confuse information, which would be a disservice to disabled users.

This document recommends the use of an accommodation strategy as the most effective means of serving the needs of disabled users. To illustrate this point, consider a digital image of a roadmap, such as a roadmap for a large federal facility like the National Institutes of Health (NIH). While this image can be tagged using <alt text> as "Map of NIH", there is little value in the text for someone who cannot see the map. Even if one extracted all the text from the map, its linear presentation would be meaningless.

In this case, an accommodation should be provided to help a disabled person use information in the map to complete a task. For example, a person might ask questions like: How many buildings are there at NIH? What's the closest building to the metro stop? Where are the cafeterias? How close is the clinical center to the conference center?

Even if a sophisticated application was created to support the map, it is unlikely that any IT solution could successfully anticipate the goals of everyone who accesses the map. A far more elegant solution would be to direct disabled users to a point-of-contact who can field their question(s) and provide answers in a form that best meets their needs.

In other instances, an accommodation would be the optimal solution when EI has been designed to interact with the user based on specific sensory user-input and interaction. For example, an on-line tool intended to gauge color blindness cannot be made accessible to someone who is completely blind. An <alt-text> tag might read "color blindness test images", but that alone would be of little value. A similar case can be made for simulations that model physical objects. Again, one could create tags for such a system, such as <an interactive 3-D molecular protein modeling tool>. However, the user needs to interact with the visual output of the modeling tool in response to the variables being tested. A conventional 508 standard does little to provide accessibility in this situation.



Rationale

The use of an accommodation is not intended to relieve organizations of their responsibility to make electronic information accessible. In some instances, an effective accommodation is an accessible statement that acknowledges there is an accessibility issue and offers to help determine the needs of users with disabilities. Organizations that employ accommodation statements must establish priorities, assign their resources appropriately, and monitor communication channels to ensure that accommodation requests are processed quickly (typically completed in no longer than 48 hours). Ideally, they will need a dedicated line operated by a trained responder. Organizations that fail to provide adequate services should not use accommodation statements.

When considering the use of an accommodation, one also can make a determination based on level of effort, document priority, document longevity, and audience availability. Documents that require a high level of effort to make them accessible, yet have a limited readership among a group with no disabilities, would not have the same priority as documents of interest to a broad, unknown audience. For example, expending valuable resources to apply accessibility standards to documents of limited value (such as an office announcement inviting a small group to a retirement party) is not a prudent use of resources. Staff capable of creating and remediating content should be considered a valuable resource.

EXCLUSIONS AND LIMITS

The use of an accommodation approach is limited when access to Web-based content is business related. This is particularly true when timeliness of access is critical to the principal of equal and fair treatment. For example, if content is posted that provides an opportunity for an award, and the submission for the award must be completed by a specific date, such content cannot be handled by an accommodation if it would place disabled users at a disadvantage.

General categories and examples of content that may be appropriate for an Accessibility Accommodation include:

- Excel computational spread sheets containing program modules and macros developed to perform automated analysis or to draw in data sets from external or legacy databases.
- Password-protected sites
- Third-party licensed PDF documents from medical and scientific journals (and conference proceeding documents)(if no-cost accessible versions cannot be linked to elsewhere on the Web)
- Multilingual PDF documents using non-Western characters
- Complex images and PDF tables, including static images and those supported and detailed narratives
- Complex math, physics, and chemical notations

- Large or complex tables, given a waiver based on consideration of:
 - Importance of the document
 - Size and nature of intended audience
 - Expectation that disabled persons would need access
 - Complexity of the table
 - Size of the table
- Complex dynamic visualizations, including: medical diagnostic and research imaging technologies, 3d-models, CAD, virtual environments
- Scanned written or poor quality historical publications/materials scanned to a digital archive
- Archived legacy files.
- Translated files (presented in a language other than English).

Excel Computational Spreadsheets

Excel computational spreadsheets, which are often designed by subject matter experts (SMEs) and non-programmers, provide complex formulas within the documents. They usually lack any sort of 508 programming. As a standalone document, the spreadsheets normally are not 508 compliant. Below are some reasons for a 508 accommodation request for Excel computational spreadsheets (interactive forms and fields):

- HHS agencies are providing Excel computational spreadsheets for other organizations for their own use. HHS has no need to collect the data and should not gather such information because of various privacy and security issues. These spreadsheets are being provided as an optional tool only.
 - Example: http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/tool_for_schools.html
(click on the "Children's BMI Group Calculator")
- The document is utilized for collaborative efforts and will be shared with team members. HTML will not support this level of functionality.
 - Example: <http://www.cdc.gov/cecredit/documents.html>. (This example form is designed to be e-mailed to an advisor who reviews it and makes changes, and sends it back to the user for further edits. The process continues until the document is approved.)
- It is inappropriate, due to limited audience size and data and security concerns, to develop a complete web application to achieve 508 compliance for a single complex Excel computational spreadsheet. Web applications take significant time to develop and require extensive security analysis.

Any additional content provided in an Excel computational spreadsheet that can stand alone from the Excel spreadsheet should be provided in a 508 compliant version (HTML preferably).

Password-Protected Sites

A password-protected site should be added as a 508 accommodation request if it meets a number of criteria:

- A legitimate, justified business case for using a password-protected site that:
 - Is online for a limited time
 - Has restricted, limited access to a known set of users, and
 - Has non-compliant content that will not be reproduced or published elsewhere

- The Business Steward (site or content owner) controls access to specific areas of the content.
- We can verify that none of our users require 508 accessible content, and limited content will be delivered in an accommodated format.
- We understand that none of the content on the secure site may be published/released to the public (Internet or Intranet) unless it is 508 compliant.
- We agree that the non-compliant content will be on the password-protected site only, and for a limited time.
- We understand and agree that posting materials on a password-protected website is not a work-around for posting non-508 compliant content.

Third Party Licensed PDF Documents from Medical and Scientific Journals (and Conference Proceeding Documents)

Below are criteria for requesting a 508 accommodation for documents in portable document format (PDFs) licensed from medical/scientific journals:

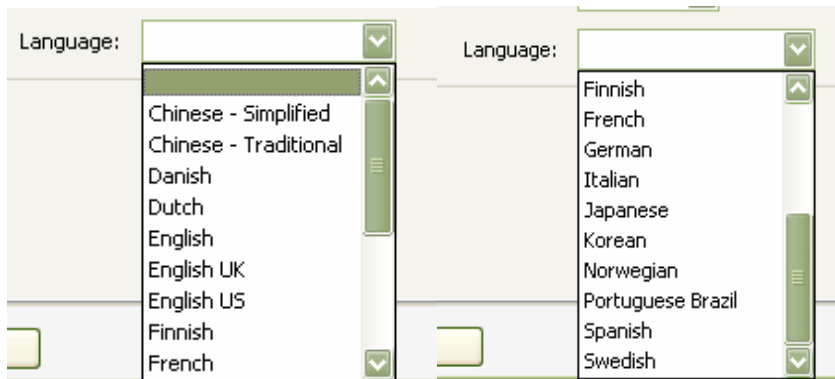
- In some cases, by contractual agreement, OPDIVs are not authorized to modify the files once purchased from a journal
- The purchaser of the article or document does not own the copyright on the purchased materials, and is therefore denied access to the source files for remediation
- These PDF articles are reproductions of journal articles as they appeared in print format and are not designed for 508 compliance in PDF format
- We cannot maintain updates to a 508-compliant version of the document on our server while the document may be updated multiple times by a journal on their servers. This creates a discontinuity that will be difficult to reconcile and maintain.

Multilingual PDF Documents Using Non-Western Characters

Below are criteria for a 508 accommodation for multilingual PDFs using non-Western character sets:

- Phonetic transliteration of each character in a PDF for the screen reader falsely assumes:
 - That the screen reader will understand, interpret, and read aloud the phonetic version of any non-Western character set into an accurate translation
 - That the end-user can read and pronounce phonetic transliterations with Western character sets, in which case an English version of the document should suffice
- Phonetic transliterations are also subjective and have not been codified into any formal, internationally recognized standard for every language
- The English version of Adobe Acrobat Professional does not support many non-Western character sets (such as Cyrillic, Greek, Thai, Hebrew, or Asian languages) in its language encoding configuration
- Documents using non-Western character sets are better served as properly encoded Unicode in HTML rather than as PDFs. PDFs of the document should be used for print only when the English equivalent is available.
- A screen reader such as JAWS will not read aloud a multilingual document which uses an unsupported language, so it is impossible to test for 508 compliance

Acrobat Professional 9 Supported Languages



JAWS 9.0 Supported Languages



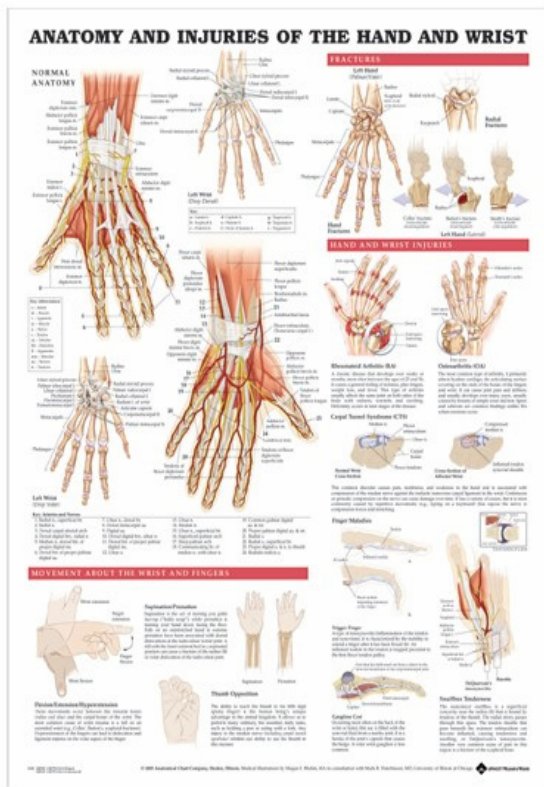
Complex Static Images

The majority of electronic information relies on text and images to convey information. In most cases, an accessible version of these documents can be created. Nevertheless, there are categories of documentation and software tools and services that resist conventional approaches to providing a meaningful equivalent accessible text version. A picture of a tree, a car, a pair of shoes, and a telephone can be described as easily as can a pie chart showing the distribution of operating funds for an organization. A chart showing a recipe or rates of return can be handled in ways that let a user extract meaning whether they can see the table or not. However, the conventional approaches do not work well in the following instances:

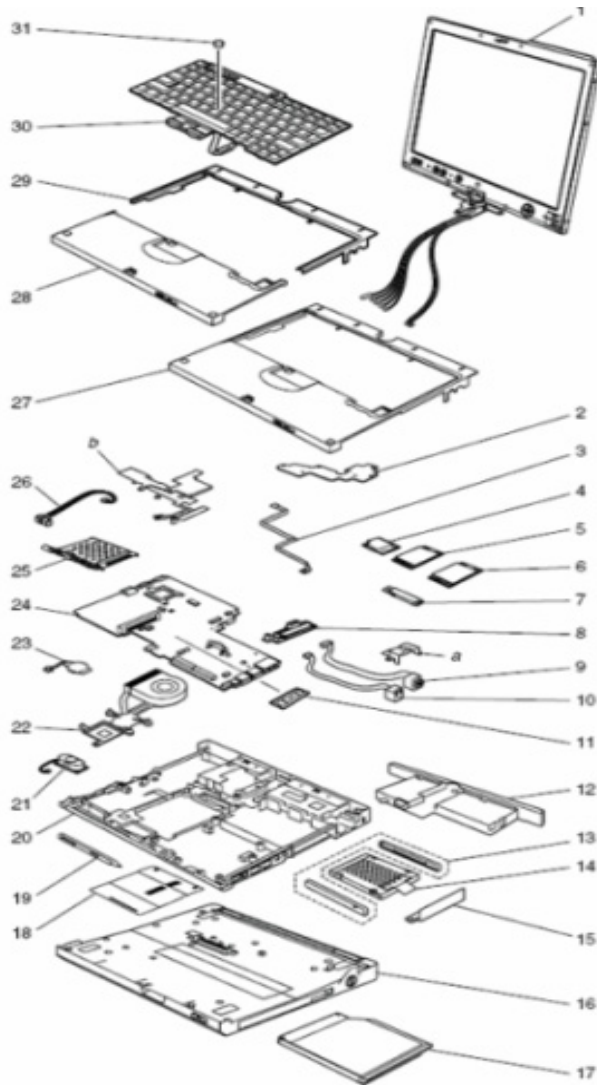
- Data is displayed in non-linear, unconventional, or analog patterns
- The image captions refer to images meant to show the relationship of parts that exist in three dimensions
- Color coding is the only feasible method of compacting large amounts of data into a representation
- “Exploded” [provide link to example in appendix—this is a term of art] technical drawings are used to pin-point parts within a complex machine
- Maps represent an analogue to physical space
- Non-linear flow charts and pathways are displayed
- Scatter plots in which a collection of small data points are used to create patterns

In the following illustrative examples, static images -- rather than standard captions -- are well suited to an accommodation:

Example: Anatomy Chart of Wrist and Hand. In this example, one could provide alt-text that reads “chart showing anatomy and injuries to the hand and wrist.” However the text would offer little substantive value to the user who cannot see the detail. Converting all the text in the chart would not help because it refers to specific regions on the images. In these cases, an accommodation approach offers a far better solution than attempting an alternative text. Moreover, it is critically important that medical information be conveyed correctly.

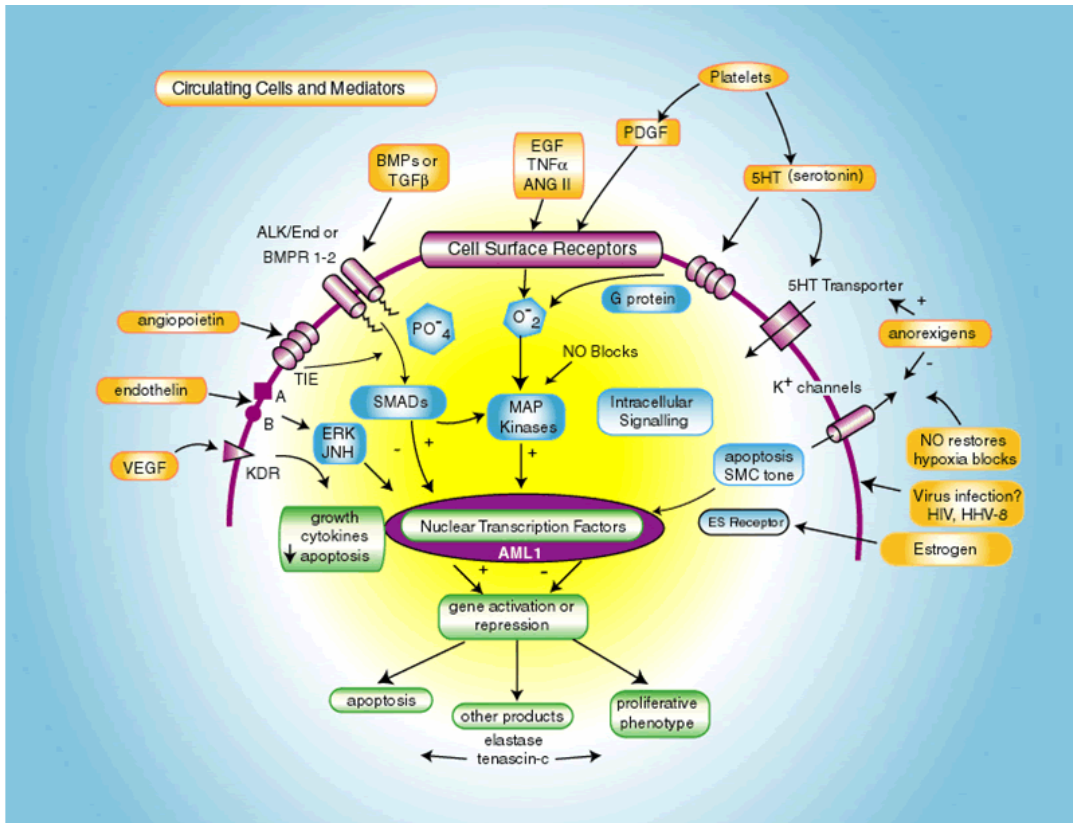
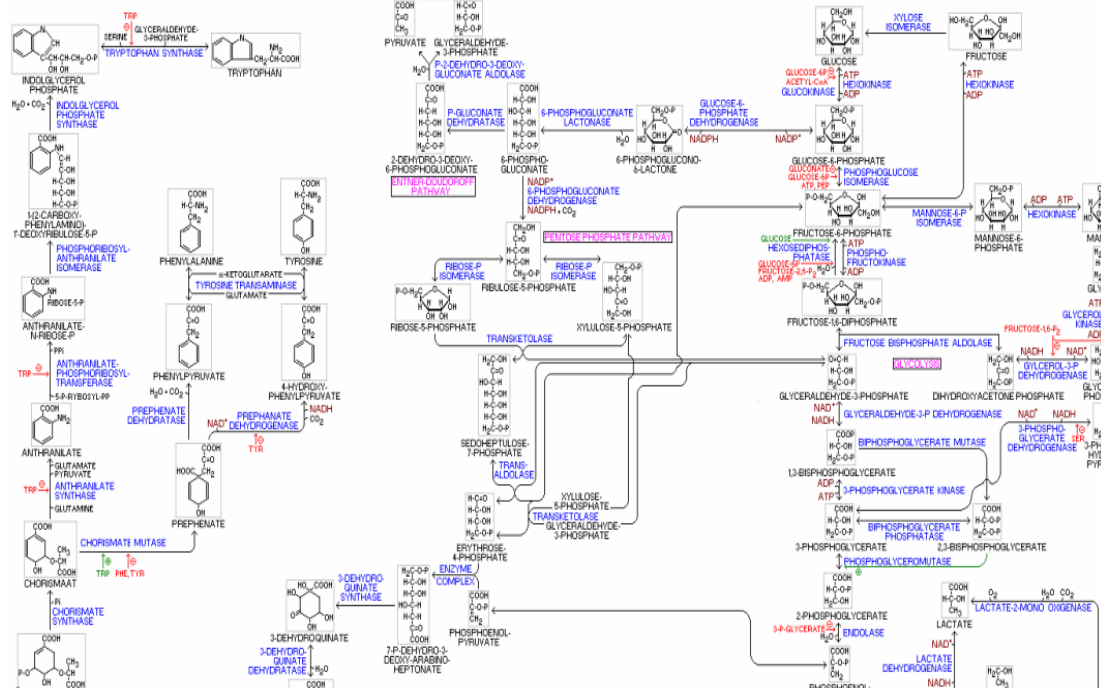


Example: Exploded Views. The same is true for technical drawing. For example, an exploded view image can be described as “an exploded view of a laptop”, but that provides little help to someone unable to see the relationship of the parts to the parts listing. In this case, offering assistance in the form of an accommodation seems to be a far more useful approach. A similar problem occurs in detailed abstractions of biological phenomena (shown below.) There is no single logical flow and some events branch depending on variables. Without an overall appreciation of how the parts relate to the whole, simply converting text to accessible text is of little value.

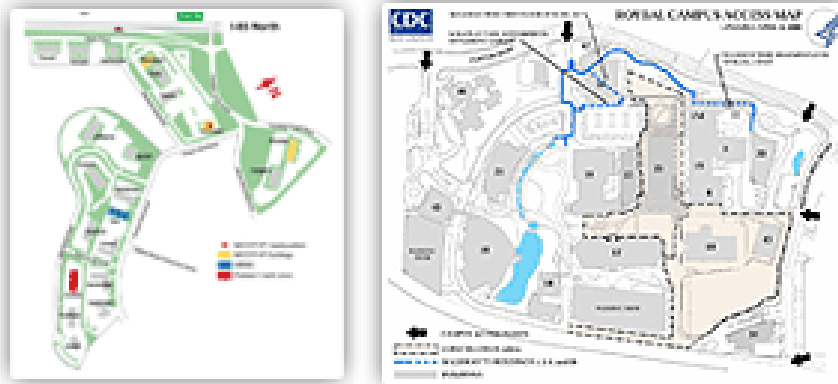


Example: Scientific Diagrams. In the example below, an <alt text> statement such as “metabolic pathways” conveys very little information of value. The substantive value of the image relates to the interrelationship between specific components. A user may be interested in only a portion of the overall diagram. Even if one extracted all the text and presented it in a screen readable format, the logical flow would not capture the complex cyclic nature of metabolic processes. Also, in some cases the chemical pathways can change direction.

On this page you find the Main Metabolic Pathways for Internet, by [Pieter van Santen](#). There are no libraries for searching on names of Pathways, Molecules or Enzymes. If you are interested in a PC version which has those capabilities, go to the [main page](#).



Some tables and diagrams require an overall visual approach to make sense of the data or the message they are intended to convey. For example, maps of the CDC campus need such an approach.



Complex PDF Tables

While it is technically possible to make a data table 508 compliant in a portable document format (PDF), a 508 accommodation is needed for specific types of PDF documents that have long data tables.

It is unreasonable to expect a person using a screen reader to sit through the audible reading of a long table. Examples of long data tables include when:

- The table in the PDF is longer than one page
- The document exceeds 10 pages and most of the content is tables
- The data table has multiple header columns and layered elements
- The table has over 1,000 different variables, cells, and footnotes, and columns that span more than 50 pages

There is no logical methodology to create an alternate description that will make the long table understandable to the user. The following is an example of a normal table that can be interpreted and read in a meaningful manner.

National Institutes of Health
(dollars in millions)

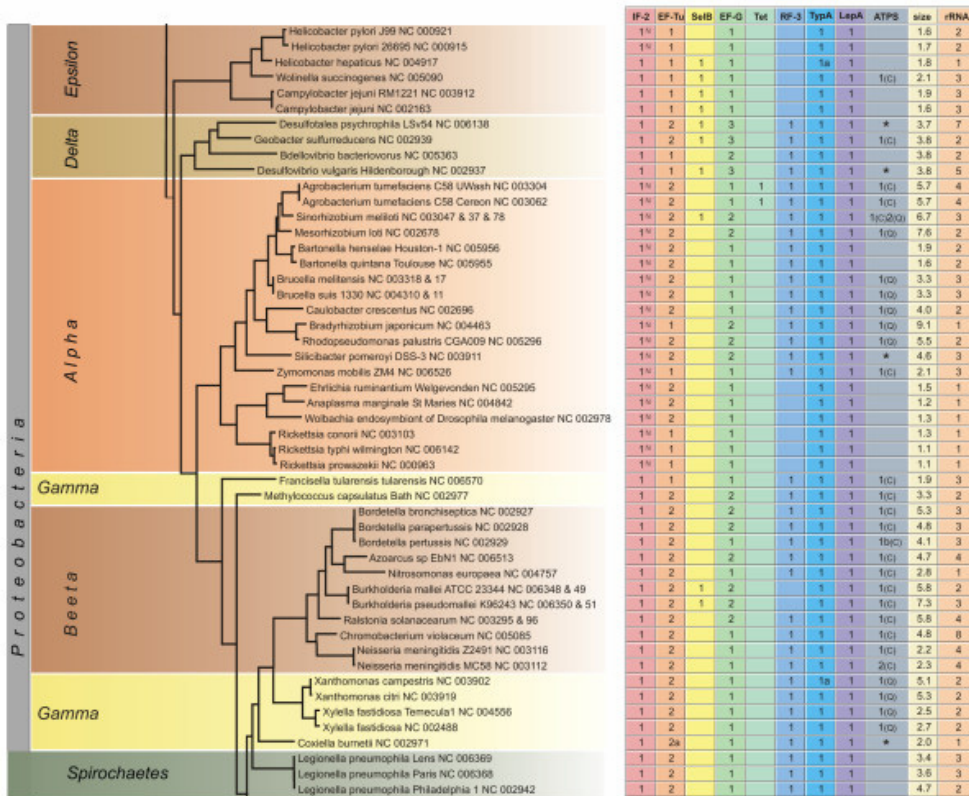
	FY 2006 Actual	FY 2007 President's Budget	FY 2007 Estimate	FY 2008 Estimate	Change from FY 2007 Estimate
Labor/HHS Discretionary Budget Authority (B.A.)	\$28,287	\$28,190	\$28,389	\$28,621	\$233
Interior B.A.	\$79	\$78	\$79	\$78	-\$1
Total Discretionary B.A.	\$28,366	\$28,268	\$28,468	\$28,700	\$232
Type I Diabetes Initiative	\$150	\$150	\$150	\$150	\$0
Total B. A.	\$28,516	\$28,418	\$28,618	\$28,850	\$232
NIH Program Level	\$28,524	\$28,427	\$28,626	\$28,858	\$232
<i>Number of Competing RPGs</i>	<i>9,129</i>	<i>9,144</i>	<i>9,622</i>	<i>10,188</i>	<i>566</i>
<i>Total Number of RPGs</i>	<i>38,313</i>	<i>37,566</i>	<i>38,089</i>	<i>38,063</i>	<i>-26</i>
<i>FTEs</i>	<i>16,880</i>	<i>17,456</i>	<i>17,216</i>	<i>17,459</i>	<i>+243</i>

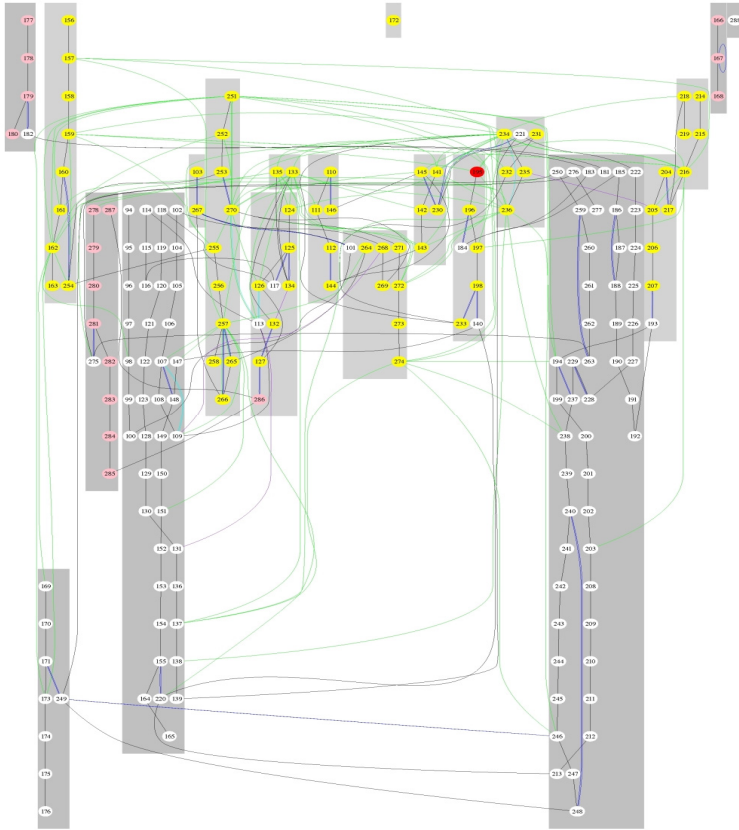
The next image is an example of a complex table that reads poorly. Because of the length and depth of data on the table, the logic does not flow well and processing the information requires a long time. This type of table also places an undue burden on the cognitive limits of disabled users to correlate the data thread and cross reference columns and rows.

NCI														
Mechanism	FY 1983 Actual		FY 1984 Actual		FY 1985 Actual		FY 1986 Actual		FY 1987 Actual		FY 1988 Actual		FY 1989 Actual	
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount
Research Grants:														
Research Proj:														
Noncompeting	1,927	\$287,425	1,877	\$292,544	1,975	\$340,245	2,110	\$390,678	2,042	\$412,433	2,078	\$451,481	2,374	\$558,114
Admin. Supp.	(106)	6,439	(189)	11,068	(161)	7,766	(137)	6,986	(178)	12,527	(157)	8,544	(114)	1,000
Competing	886	111,896	963	157,635	1,017	168,464	950	161,496	1,061	218,193	973	205,378	728	158,114
Subtotal, RPGs	2,813	405,760	2,846	461,247	2,932	516,475	3,060	559,160	3,103	643,153	3,057	665,403	3,102	727,168
SBI/R/STTR														
Subtotal, RPGs	2,813	405,760	2,846	461,247	2,932	516,475	3,060	559,160	3,103	643,153	3,057	665,403	3,102	727,168
Research Centers:														
Specif/Comp.	60	77,755	59	79,273	58	84,957	59	88,426	60	95,819	60	100,427	56	111,111
Clinical Research														
Biotechnology														
Comparative Med.														
RCMI														
Subtotal, Centers	60	77,755	59	79,273	58	84,957	59	88,426	60	95,819	60	100,427	56	111,111
Other Research:														
Research Careers	123	4,992	122	5,300	127	6,799	115	6,593	132	7,660	128	7,622	123	7,622
Cancer Ed.	58	5,575	50	4,444	45	3,963	56	3,412	38	1,627	43	1,742	44	1,742
Coop. CL	267	44,704	271	47,986	271	50,822	219	49,338	221	57,077	190	59,308	171	61,111
BRS														
MBRS		2,087		3,148		3,373		3,187		3,039		3,039		3,039
Other	31	3,437	52	4,692	59	4,614	76	5,142	178	7,691	178	9,419	212	11,111
Subtotal, Other	479	60,795	495	65,570	502	69,571	466	67,682	569	77,094	539	81,130	550	88,111
Total, Res. Grants	3,352	544,310	3,400	606,090	3,552	671,003	3,585	715,268	3,732	816,066	3,656	846,960	3,708	900,111
Training:														
Individual	161	3,009	178	3,160	241	5,308	174	3,917	175	3,968	141	3,165	162	1,622
Institutional	1,322	20,944	1,287	20,685	1,223	25,489	1,220	25,595	1,300	27,760	1,315	28,696	1,268	2,222
Total, Training	1,483	23,953	1,465	23,845	1,464	30,797	1,394	29,512	1,475	31,728	1,456	31,861	1,428	3,844
R & D Contracts (SBI/R/STTR)	428	134,898	441	142,142	437	153,132	447	135,432	440	173,700	413	180,856	383	181,111
Intramural Research		174,000		185,767		193,978		208,805		244,747		268,251		291,111
Res. Mgmt and Support		53,081		58,123		58,649		56,781		64,042		70,825		71,111
Cancer Control		53,569		63,282		63,794		61,372		67,457		69,682		71,111
Construction		3,000		2,211		6,500		3,114		5,050		0		0
Buildings and Facilities														
Total, NCI	966,811	1,081,460	1,081,460	1,177,853	1,177,853	1,210,284	1,210,284	1,402,790	1,402,790	1,468,435	1,468,435	1,570,111	1,570,111	1,570,111
SBI/R/STTR included in RPG summary through FY 1993.														

Atypical Tables and Chart Formats

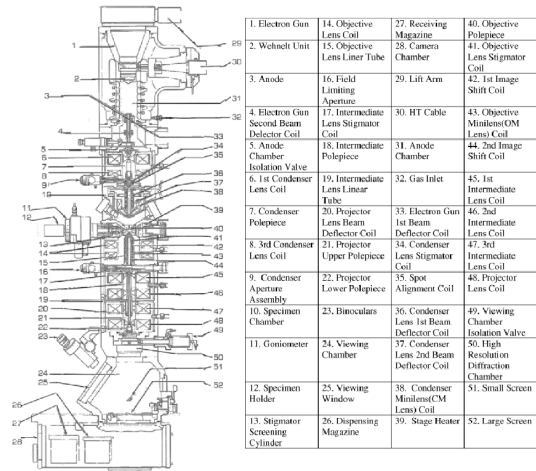
Often in scientific and technical publications, data is represented in unique methods. Attempting to apply standard 508 solutions to these “tables” would result in an unintelligible string of data. While the caption for the first table could be read after applying 508, it is of questionable value to someone who cannot see the table. These examples suggest an accommodation would be preferable to a conventional tagging approach. More over, the caption of the table may be confusing.





Complex Images

In this example, both the images could be tagged with a simple tag such as <microscope>, <basic optical microscope>, or perhaps <basic electron microscope>. Section 508 standards require that the text in complex images be made accessible. However, the text in complex images refers to the location of parts within the device. There is little likelihood that expending time and resources to bring such an image into 508 compliance would be of value to anyone. While both images should be tagged, an accommodation approach would be a far better solution to the latter image.



If complex images are used in association with substantive descriptive text narratives, detailed <alt text> statements are not necessary. In essence, these images are used to supplement and reinforce the written content and were not intended to “stand on their own” as the sole means of conveying the key points of the article.

Immune System

The Structure of the Immune System

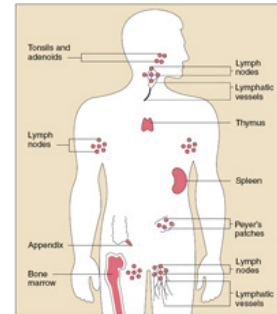
The organs of the immune system are positioned throughout the body. They are called lymphoid organs because they are home to lymphocytes, small white blood cells that are the key players in the immune system.

Bone marrow, the soft tissue in the hollow center of bones, is the ultimate source of all blood cells, including lymphocytes. The thymus is a lymphoid organ that lies behind the breastbone.

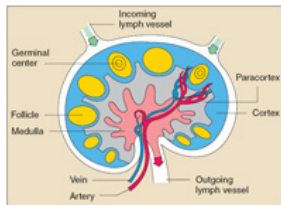
Lymphocytes known as T lymphocytes or T cells ("T" stands for "thymus") mature in the thymus and then migrate to other tissues. B lymphocytes, also known as B cells, become activated and mature into plasma cells, which make and release antibodies.

Lymph nodes, which are located in many parts of the body, are lymphoid tissues that contain numerous specialized structures.

- T cells from the thymus concentrate in the paracortex.
- B cells develop in and around the germinal centers.
- Plasma cells occur in the medulla.



Credit: NIAID. View the illustration showing the organs of the immune system positioned throughout the body.



The lymph node contains numerous specialized structures. T cells concentrate in the paracortex, B cells in and around the germinal centers, and plasma cells in the medulla. Credit: NIAID. View the illustration showing the lymph node.

Lymphocytes can travel throughout the body using the blood vessels. The cells can also travel through a system of lymphatic vessels that closely parallels the body's veins and arteries.

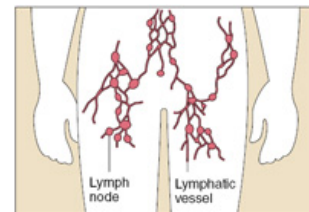
Cells and fluids are exchanged between blood and lymphatic vessels, enabling the lymphatic system to monitor the body for invading microbes. The lymphatic vessels carry lymph, a clear fluid that bathes the body's tissues.

Small, bean-shaped lymph nodes are laced along the lymphatic vessels, with clusters in the neck, armpits, abdomen, and groin. Each lymph node contains specialized compartments where immune cells congregate, and where they can encounter antigens.

Immune cells, microbes, and foreign antigens enter the lymph nodes via incoming lymphatic vessels or the lymph nodes' tiny blood vessels. All lymphocytes exit lymph nodes through outgoing lymphatic vessels. Once in the bloodstream, lymphocytes are transported to tissues throughout the body. They patrol everywhere for foreign antigens, then gradually drift back into the lymphatic system to begin the cycle all over again.

The spleen is a flattened organ at the upper left of the abdomen. Like the lymph nodes, the spleen contains specialized compartments where immune cells gather and work. The spleen serves as a meeting ground where immune defenses confront antigens.

Other clumps of lymphoid tissue are found in many parts of the body, especially in the linings of the digestive tract, airways, and lungs—territories that serve as gateways to the body. These tissues include the tonsils, adenoids, and appendix.



Immune cells and foreign particles enter the lymph nodes via incoming lymphatic vessels or the lymph nodes' tiny blood vessels. Credit: NIAID. View the illustration showing the lymph nodes and lymphatic vessels interconnected within the body.

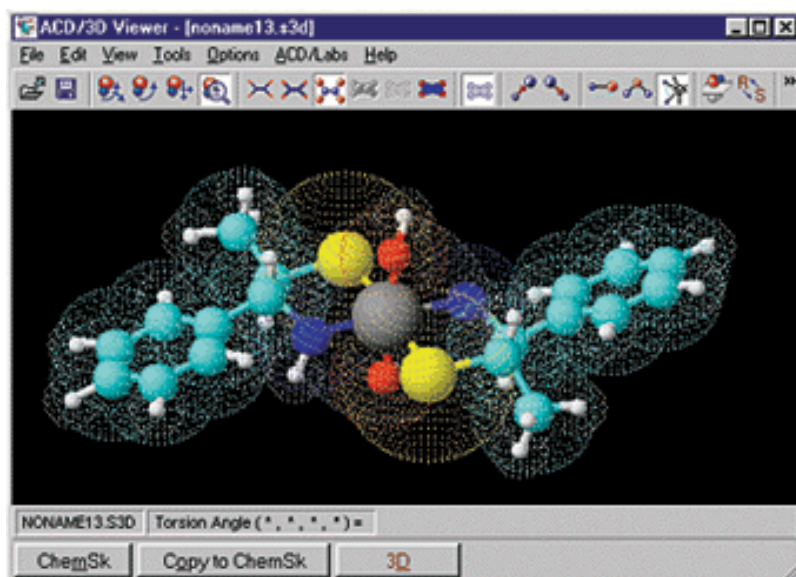
In other instances, an image is used without a detailed narrative. One can assume that the author relies entirely on the image to convey the key message. In this example, (see 2.1 Apparatus below) the order and method of assembling a sampling device is not explained in detail in the readable text. The image is crucial to a full understanding of the assemble order of the device. In this case, and in other cases where images are designed to be acted upon (For example, a blueprint is an actionable image whereas a simple snapshot of a building is not.), the use of an

accommodation is advisable. The preference for an accommodation increases as you move in the direction of complexity and impact if personal safety is involved.

Dynamic Simulations, Models, and Maps

Another broad class of applications and Web-enabled software involves tools to manipulate data in a dynamic fashion, or simulate events or objects. Such applications are used often in medicine, science, and technology. Examples include dynamic models of weather patterns, online geographic information systems, and computer assisted design tools, including those used to design drugs and investigate events at the molecular level and mapping tools used by epidemiologists and other researchers. Due to the dynamic and interactive nature of the display, there is no way to label or tag the event in advance. Typically, investigators would enter experiment variables. The resulting displays have no alpha numeric equivalent. Accordingly, having an expert to use the tool and interpret the results would be the only feasible method of making such tools useful to someone with a visual disability.

There are many applications designed to allow one to model, manipulate, and measure molecular models.



Again, simply providing text that reads “dynamic 3-d model of a molecule” is not a suitable alternative to the experience of using the tool to investigate the properties of the compounds.

This is also true for tools that allow one to enter data and display the results using advanced custom visualizations.

Virtual Environments

Sites and programs that model and simulate the manipulation of objects in virtual space are in another category of images best served as accommodations. In this example, a virtual space is used for research on patients with physical balance disorders. If the balance disorder is related to processing visual information, there is no equivalent for non-sighted users.



In this example, a virtual reality grocery store simulates the challenge of shopping for people who have physical balance disorders.

Scanned Historical Publications/Materials and Optical Character Recognition

Organizations responsible for the care and preservation of rare and historic books and manuscripts must limit access to the actual physical material. For educational and research purposes, some HHS libraries make available scanned versions of historical materials found in archival manuscript collections. In most instances, scanned historical textual materials cannot be interpreted by current optical character recognition (OCR) engines. While the invention of Gutenberg's movable type allowed for the creation of standardized mechanical printing, even today many printed texts cannot be interpreted for text extraction by OCR technology. Reasons can be font styles lacking modern OCR libraries, non-Roman languages, ink bleed through (haloing), degraded paper stock, editorial marginalia, etc. Handwritten texts offer these same issues, in addition to the fact that OCR technology cannot interpret handwriting.

Materials that OCR technology may not be able to interpret include, but are not limited to:

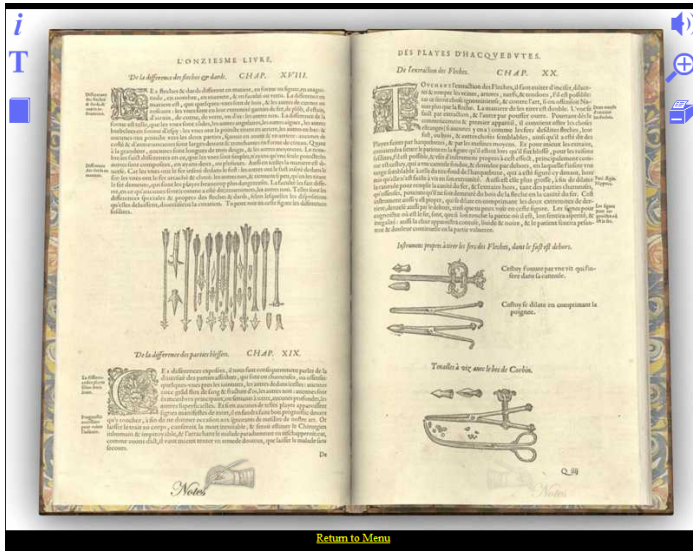
- Rare books
- Handwritten correspondence
- Diaries
- Laboratory notebooks
- Carbon copies and photocopies
- Antique font types

While OCR technology continues to evolve and can better interpret machine-printed text, it is unlikely that any technology will be able to interpret handwritten materials. An accommodation should be offered for digitized items that are not suitable for optical character recognition, such as rare books, handwritten items, or faded/smear prints.

Example: Virtual Historic Books. Normally, rare books and manuscripts created hundreds of years ago are carefully preserved in libraries and are not accessible to the public. To address this problem, the British Library initially created a system called *Turning the Pages* or *TTP*. The system allows V visitors to touch and turn the pages of virtual books displayed on a touch screen

monitor. Through a collaborative effort with the British Library, the National Library of Medicine became the first United States Website on which books were made available using this format.

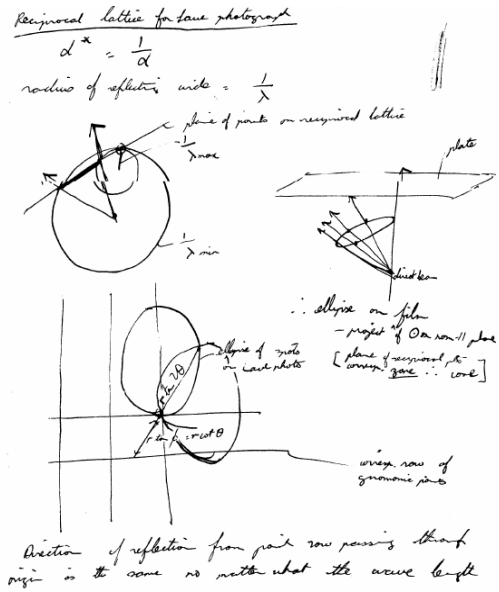
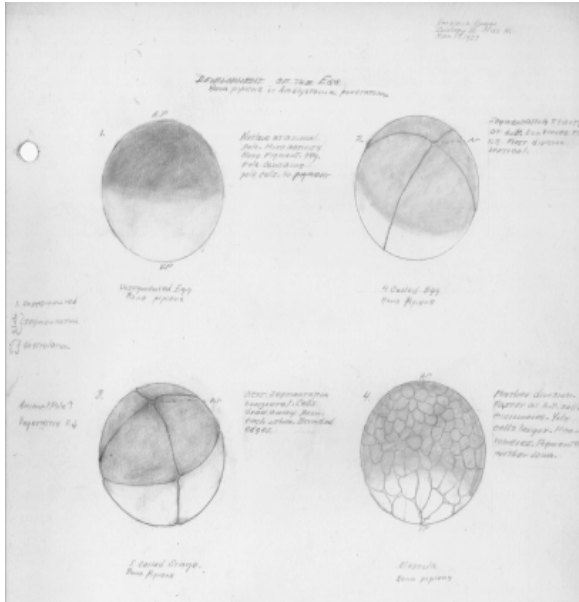
This example involves the use of advanced 3-D computer generated imagery, digital image enhancement, animation, illumination models, and software programming to simulate the act of easily flipping through virtual books. In addition, TTP provides extra information about the authors of the books and the subject matter in the form of curators' notes, captions, and "tales". Unfortunately, creating accessible content for TTP images using conventional 508 standards is not feasible.



Example: Historic Handwritten Laboratory Notes and Related Laboratory Historical Materials. For educational and research purposes some HHS libraries provide scanned versions of historical materials found in the archival manuscript collections of pioneering biomedical scientists. The materials include:

- One-of-a-kind handwritten correspondence
- Diaries
- Laboratory notebooks
- Carbon copies and photocopies
- Audio clips, and
- Video clips

Typically, archivists make the digitized versions of these items accessible by providing a detailed metadata record with extensive information describing each digitized item. The metadata records are available in accessible HTML format on the Website and link directly to the digitized item (usually a portable document format (PDF) file.) Through the use of detailed metadata records, information about these historical archival materials is accessible to people with disabilities in a way that the original materials alone cannot be accessible. When feasible, text-based historical archival materials should be processed through optical character recognition (OCR) technology to make the content accessible to screen readers. For digitized items that are not suitable for optical character recognition, such as handwritten items or faded/smeared prints, staff should create transcripts as time and resources permit. A couple examples are below.



Developed by the Accessibility Accommodations Workgroup, HHS Web Governance Council

Members: Dennis Rodrigues, Carol Crawford, Joshua Lehman, Ketan Patel, Dawn Colbert, Biff LeVee, Prudence Goforth, Richard Stapleton