Out Of Date

Adjectival Rating

Normalized to adjectival ratings

Draft

9 July 2020

NOTE: Please also see the updated proposal for comparison and discussion based on 7/14 feedback

Disclaimer

- **Goal**: To show a possible approach to scoring and conformance
  - I have included wording of guidelines, functional outcomes, scoring levels and tests to act as examples for the purpose of clarity
  - When possible I pulled text from existing standards and subgroup work. When I could not find existing language, I made stuff up
  - Wording choices are not final or even suggested as final and my often poor wording choices are not worth focusing on
  - I have placed a stake in the ground for percentages and other cutoffs. They are currently based on a 90% success. They will need revision based on more testing.

Ideas Incorporated

- Adjectival rating
- Functional needs
- Percent completion
- No page is perfect
- Path/task based conformance
- Non interference
- Bronze, Silver, Gold
- Incorporate usability testing
- Allow for tests outside typical 2.x scope
- Provide a comparable point to 2.x to facilitate transition
- Current small SC (language in page) need to be balances with current large SC (text alternatives)
- Avoid bias for/against different disabilities
- Substantial conformance

Declaring Scope

Conformance is defined for paths. However, a conformance claim may be made to cover one path, a series of paths, or multiple related paths.

- Path - A single view or the complete series of views needed to complete a task from end-to-end.
  - A path defines both the views and components needed for conformance
  - A component without its associated view is not considered a path
  - While some tests may require data outside the path (consistent help location) conformance is only reported against the path
  - A path can be an entire set of views that make up a site
- View - All content visually and programatically available without an interaction equivalent to loading a new page
  - Note: this will require some more work. We want content such as drop downs to be in scope but content that mimics a page reload to be out of scope even if its on a “single page” app

Documentation Hierarchy

- Functional Categories
  - High level grouping of functional needs
- Guidelines (Functional Outcome)
  - Score each guideline based on tests between 1 and 5
  - Guidelines have a many:many relationship with functional categories
- Tests
  - 3 types of tests
    - Level 1: Tests that would fit within the 2.x structure (automated, manual, page based)
    - Level 2a: Tests that require context to evaluate or are harder to meet
    - Level 2b: Usability or AT testing
  - Tests have a one to many relationship with Guidelines

Alternative Text

Non-text content can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language

Level	Test
1	Image buttons have alternate text
1	Images have alternate text
1	Decorative images have alt=“”
1	Content images have alt=“[some text]”
1	Alternative text is equivalent to image content (In alt tag or on page)
2a	Alternative text uses plain language (In alt tag or on page)
2b	Alternative text helps screen reader users understand content and complete tasks

Visual Contrast/Affordances

The visual presentation has sufficient visual contrast

Level	Test
1	The visual presentation of text has a contrast ratio of at least 4.5:1
1	The visual presentation of images of text has a contrast ratio of at least 4.5:1
1	The visual presentation of User Interface Components and Graphical Objects have a contrast ratio of at least 3:1
2a	Each interactive interface component provides a visual indicator, which conveys its active area and purpose.
2a	The visual presentation of text and images of text has a contrast ratio of at least 7:1
2b	Users with limited vision can read text
2b	Users with limited cognition can identify controls

Clear Written Content

Content aids understanding and reading comprehension; avoids causing confusion and relying on memory

Level	Test
1	The content does not contain spelling errors (automated spell checker)
1	The content does not contain grammatical errors (automated grammar checker)
1	The content spells out acronyms on first use
1	The content provides alternatives to numbers, symbols, icons and images to ensure as many people as possible are able to understand
1	The content uses simple, common words and concrete words and phrases to aid reading comprehension and retention
1	The content avoids implications, sarcasm, unnecessary words, double negatives, and clauses inside clauses to reduce confusion
2a	The content passes an editorial review of content against plain language standards
2b	Users with limited cognition understand and can use the content
2b	Users with dyscalculia understand and can use the content

1. Identify the components and associated views needed for users to complete the path
2. Run all level 1 tests for all views within a path
3. Write down all failures on components needed to complete the path
4. Write down the % tests passed for each view (total passed/total in view)
5. Write down tests that are not applicable (These are not counted in the scoring)
6. Average all the tests for a guideline for an overall %
7. Score each guideline based on % of tests passed
    - 100% - 3
    - 75-99% - 2
    - 51-74% - 1
    - 0-50% - 0
8. Average the score of all guidelines to a single decimal point
9. If average score = 3, run level 2a and/or 2b tests
10. If 90% or greater of level 2a or 2b tests pass, increase the guideline score to a 4
11. If 90% or greater of **both** 2a and 2b tests pass, increase the guideline score to a 5
12. Calculate overall and functional category scores
    - Overall = average of all guideline scores
    - Each functional category = average of related guideline scores

Conformance

- Adjectival Rating
  - 0-1: Inaccessible
  - 1-2.7: Needs Work
  - 2.8-3 and no errors in path: Substantially Conformant
  - 3-3.7 Bronze
  - 3.8-4.4 Silver
  - 4.5-5 Gold
- Substantial conformance would require at least a 2.8 in all functional categories and no errors on components that are required to complete the path
  - Regardless of selected path, non-interference is also in scope at the view level to meet conformance
- Conformance would require at least a 3 in all functional categories
- Bronze, Silver and Gold would require at least a 3 in all functional categories and an overall score that is within the range listed above.

Functional Categories

- Based on Functional Needs
  - Essential
  - Vision / Visual
  - Hearing/ Auditory
  - Sensory Intersections
  - Mobility
  - Motor
  - Speech
  - Attention
  - Language & Literacy
  - Learning
  - Memory
  - Executive Mental Health
  - Independence

Sample Page

- Path to get to a contact us form
  - 3 view path
  - Components in path: Drop down menu, link, form fields, submit button
  - Issues found
    - Nesting not correct (Did not include this)
    - Minimal heading structure on one page
    - Mobile menu in content and tab order
    - Link in footer indicated by color only
    - Form fields without autocomplete
    - Form fields with insufficient contrast against background
    - Hover drop down menus could not be dismissed
    - Focus not visible on some controls
    - No skip link or aria landmark structure

Functional Category	Rating
Essential	3.0
Vision / Visual	2.6
Hearing/ Auditory	Not Present
Sensory Intersections	2.6
Mobility/Motor	2.5
Speech	3.0
Attention	Not Present
Language & Literacy	3.0
Learning	2.3
Memory	Not Present
Executive Mental Health	?
Independence	?
Total	**2.6**
# Failures in Path	**15**

History & Notes
(Everything below is old or draft)

Thoughts

Assumptions

- There needs to be a clear dividing line that allows a transition between 2.x and 3.0
- Some set of basic tests needs to be passed before usability testing or more complex, contextual tests make sense
- Functional outcomes drive the usability test cases

Questions

- Tests should not need to be scored the same but must be normalized afterwards
  - Pass/Fail
  - Percentage
  - Adjectival
  - Others?
- Method = test, unit/scope, and how it's scored and the techniques used to meet it
- Normalize using % at each level of tests?
  - Pass = 100%, Fail = 0%
  - Percent = percent
  - Adjectival: 1=20%, 2=40%, 3=60%, 4=80%, 5=100%
- Do we need 1 or 2 levels of normalization for good validity?
  - Tests, Functional Outcomes, Functional Categories
  - Tests, Functional Outcomes, Guidelines and Functional Categories

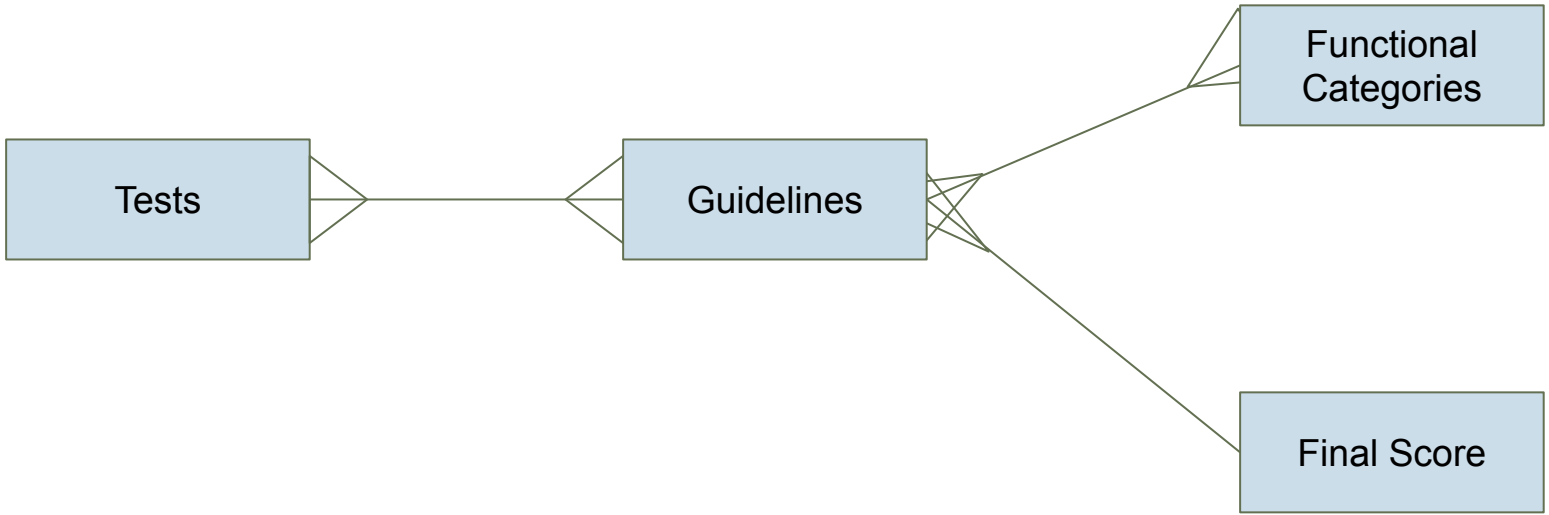
Adjectival Breakdown by %

0	1	2	3	4	5
Less than 50% of level 1 tests	51-74% of level 1 tests	75-99% of level 1 tests	100% of level 1 tests	100% level 1 tests plus 90% of either 2A or 2B	100% level 1 tests plus 90% of either 2A and 2B

Notes from Testing

- In order to get a consistent % passed, the tests will need to be more granular than current SC and clearly define what is counted as an “item” against the %
  - ACT tests will be very important to this approach
- Tests will need to also need to be outcome based but specific so they can be mapped to guidelines
  - If we can organize the structure so that tests only map to a single guideline (vs a many to many relationship, this will be simpler and easier)
- Functional categories should be distinct and applicable
  - I’ve combined Mobility and Motor
  - Is Independence its own category?
  - Need to create the guidelines and tests and then can finalize the categories
- Working out a % for content related tests is very difficult. What % fails resize text for example?
- When a user has to tab through an error to get to a component, is it in path (examples: Bypass blocks, focus order tests)
- Sometimes when a current SC is “not present” it should likely be counted a success

Data Model



Adjectival Ratings - Example

	A	B	C	D	E	F	G	H
1	**Functional Outcome**	**0 - Inaccessible**	**1 - Initial**	**2 - Needs more work**	**3 - Good/Bronze**	**4 - Great / Silver**	**5 - Excellent / Gold**	**Score Given**
2	**The structure can be visually and programmatically determined**	Automated tests failed	- Section headings and/or ARIA landmark regions are used to organize the content - Headings are not empty - Heading levels only increase by one	- ARIA landmarks regions are used incorrectly	- Headings describe the topic or purpose	- The programmatic structure is visually distinguishable - Headings are visually distinct - Headings are plain language	- Headings help users with limited cognition quickly orient to content and complete tasks - Headings help screen reader users quickly navigate content	5
3	**Non-text content can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language**	Automated tests failed	- Image buttons have alternate text - Images have alternate text	- Decorative images have alt="" - Content images have alt="[some text]"	- Alternative text is equivalent to image content	- Alternative text uses plain language	- Alternative text helps screen reader users understand content and complete tasks	2
4	**The visual presentation of has sufficient visual contrast**	Automated tests failed	- The visual presentation of text has a contrast ratio of at least 4.5:1	- The visual presentation of images of text has a contrast ratio of at least 4.5:1	- The visual presentation of User Interface Components and Graphical Objects have a contrast ratio of at least 3:1	- Each interactive interface component provides a visual indicator, which conveys its active area and purpose. - The visual presentation of text and images of text has a contrast ratio of at least	- Users with limited vision can read text - Users with limited cognition can identify controls	4

Available at: https://docs.google.com/spreadsheets/d/1Ctg489tMunn6Yfqc2x-S24WGBz6TDHuyGXBk7Y_PqJI/edit#gid=727657471

Documentation Hierarchy

- Functional Categories
- Guideline/Functional Outcome (Scoring is handled at this level)
  - Assigned a score based on the highest test level passed at 100% of scope
  - Test Levels
    1. Tests that do not require a judgement call (Yes/No)
       - Example: Do images have alt text?
    2. Tests with easy judgement call (A/B)
       - Example: Should the image be alt=“” or alt=“[some text]”?
    3. Manual tests with quality assessment (Equivalent to WCAG 2.x)
       - Example: Does alt text represent the image content?
    4. Tests that require context to evaluate or are harder to meet (wider design/tasks/more demanding user needs)
       - Example: Does the alternative text uses plain language principles?
    5. Usability testing and testing with AT
       - Example: Do JAWS and NVDA users understand the alternative language when completing tasks?

Structure

The structure can be visually and programmatically determined

Level	Test
1	Section headings and/or ARIA landmark regions are used to organize the content
1	Headings are not empty
1	Heading levels only increase by one
2	ARIA landmark regions are used correctly
3	Headings describe the topic or purpose
4	The programmatic structure is visually distinguishable
4	Headings are visually distinct
4	Headings are plain language
5	Headings help users with limited cognition quickly orient to content and complete tasks
5	Headings help screen reader users quickly navigate content

Alternative Text

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5	Users with limited cognition understand and can use the content
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Test Scoring Rules

Each functional outcome is scored with an integer between 0 and 5 based on the tests passed

100% of the scope must pass the tests at a level and all levels below to get that score

- You can only score a higher number on a functional outcome if 100% of the scope of all previous numbers are passed

Concern with this approach

- Adding a test at a lower level later on could dramatically change a score
- We will need to either require conformance at the functional category level (recommended) or carefully balance scores across disability categories to avoid bias
- This will need a 1 to many relationship between functional categories and functional needs

Final Score

This approach will result in a total final score and final score in each functional category

- These are reported as an average to the 1st decimal place (example: 2.6)

The overall scores equate with the following adjectival rating:

- 0 - Inaccessible
- 1 – Initial
- 2 – Needs work
- 3 – Good /Bronze (Current WCAG 2.x)
- 4 – Great / Silver
- 5 – Excellent / Gold

While the final score will give an indication of overall accessibility, conformance would require a 3 or greater in each functional category

- Otherwise excelling in one category (Example: hearing) would put another category (Example: vision) at a disadvantage

Positive and Negatives

Positive

- This approach focuses on functional outcomes so prioritizes the results and balances needs of groups with disabilities
- By grouping tests underneath these, we reduce currently disproportionate SC
  - Language on page becomes less impactful when included with other language tests
- Designed to make switching to this model from 2.x relatively easy
- Allows tracking progress over time
- Allows for a variety of scopes and technologies.
  - Each functional outcome should include tests for specific technologies

Negative

- Does not incorporate percentages so it retains the pass/fail model of 2.X at the test level
- Updates that include new tests at a lower level can potentially shift scores dramatically
- Work is needed to create meaningful and useful groups of tests under Guidelines/Functional Outcomes

Work

- Does not address scoping question directly
- Doesn’t meet goal of giving people an understanding of how accessible they are

Functional Performance Criteria

Functional Needs

- Essential
- Vision / Visual
- Hearing/ Auditory
- Sensory Intersections
- Mobility
- Motor
- Speech
- Attention
- Language & Literacy
- Learning
- Memory
- Executive
- Mental Health
- Independence

Section 508.gov

- Without Vision
- Limited Vision
- Without Perception of Color
- Without Hearing
- Limited Hearing
- Without Speech
- Limited Manipulation
- Limited Reach and Strength
- Limit Language, Cognitive, and Learning Abilities

EN 301 549

- Usage Without Vision
- Usage with Limited Vision
- Usage Without Perception of Color
- Usage without Hearing
- Usage with Limited Hearing
- Usage without Vocal Capability
- Usage with limited Manipulation or Strength
- Usage with Limited Reach
- Minimize Photosensitive Seizure Triggers
- Usage with Limited Cognition

Functional Outcomes & Guidelines

- Will 2 or 3 levels of normalization work best?
  - If 3 then we need both
  - If 2 than one or the other
- Which best meets the technology neutral and readability/usability requirements?
- Clear guidance on writing these is needed once the hierarchy is decided on
  - Non-text content can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language
  - Provide text alternatives for images
  - A person can have the text alternative read aloud using synthesized speech.
  - Examples
    - Use headings and sub-headings for your text. Headings — including titles and subtitles — organize words and images on a web page.
    - Use clear language to make it easier for readers to understand.
    - Provide sufficient contrast between foreground text and its background.

Testing needed to answer these questions.

Possible Levels

Level	Option 1
Level 0 - Tests	• Heading has non-empty accessible name * • Heading is descriptive * • Heading is visually distinct
Level 1 - Methods	•
Level 2	• Organizes text into logical chunks to make locating information easier and faster. • Uses visually distinct headings so sighted readers can determine the structure. • Provides semantic structure to support assistive technology-- headings are coded as headings. • Conveys a sense of hierarchy that helps the user explore and navigate the text material. • • Users have perceived the structure • Users have visually perceived the structure
Level 3 - Guidelines	• Visual Contrast, Customization, Clear Language, Navigable, Structural,

Level 4 - Functional Needs	1. Use without vision
	  a. Use as blind (born without vision)
	  b. Use with blindness (acquired blindness during lifetime)
	2. Use with limited vision
	  a. Use with limited central vision
	  b. Use with limited peripheral vision ·XR·
	  c. Use with limited interocular acuity or monocular input
	3. Use without color perception
	4. Use with limited color perception
	5. Use with limited depth perception ·XR·
	6. Use with limited orientation or spatial tracking ·XR·
	7. Use with photosensitivity (too much or too little)

Level Definitions

-
- **Functional Outcome:** (Draft Definition) A statement that describes a singular objective of a user has been met – usually in the context of a task or overall goal – that may need to name or cite a functional need.
  - Users perceived the headings;
- **Guidelines:**
  - Organizes text into logical chunks to make locating information easier and faster.
  - Uses visually distinct headings so sighted readers can determine the structure. Etc
  - Provides semantic structure to support assistive technology-- headings are coded as headings.
  - Conveys a sense of hierarchy that helps the user explore and navigate the text material.

Path vs. View Based Scope

Path Based

Conformance is defined for paths. However, a conformance claim may be made to cover one path, a series of paths, or multiple related paths.

View Based

Conformance is defined for views, screens or multiple related screens (paths). A conformance claim for a path may consist of one screen (or view), a series of screens (a path), or multiple related paths.

Documentation Hierarchy Option 1

- Functional Need Categories
  - Example: Without Vision
- Functional Outcomes or Guideline
  - Functional Outcome Example: A person can have the text alternative read aloud using synthesized speech.
  - Guideline Example: Provide text alternatives for images
- Tests
  - 1 Atomic
    - Example: Image has non-empty accessible name
  - 2A Contextual
    - Example: Alternative text uses plain language
  - 2B Holistic
    - Example: Screen reader user understands the image within the context of the task

Four Ways to Scope Conformance

Conformance is defined for content, components, paths, or views.

- Path (Both % and failures on the path apply, Bronze-Gold conformance possible)
  - Conformance defined for paths. However, a conformance claim may be made to cover one path, a series of paths, or multiple related paths.
  - All content and components included within the views on the stated path are in scope
- View (Only % apply, Minimal conformance only)
  - Conformance defined for views. However, a conformance claim may be made to cover one view or a representative sampling of views.
  - All content and components in view are in scope.
- Content (Only % apply, Only content related methods apply, Minimal conformance only)
  - Conformance defined for a defined amount of content.
- Component (Only % apply, Only component related methods apply, Minimal conformance only)
  - Conformance defined for a single component or set of components.

Documentation Hierarchy Option 2

- Functional Need Categories
  - Example: Without Vision
- Functional Outcomes
  - Example: A person can have the text alternative read aloud using synthesized speech.
- Guidelines
  - Example: Provide text alternatives for images
- Tests
  - 1. Atomic
    - Example: Image has non-empty accessible name
  - 2A Contextual
    - Example: Alternative text uses plain language
  - 2B Holistic
    - Example: Screen reader user understands the image within the context of the task

Structure - 3 Level Normalization Old

1 → Many