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## Method for Adaptive Labels on Content Based on the Accessibility Persona or Domain Expertise of the User

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## **METHOD FOR ADAPTIVE LABELS ON CONTENT BASED ON THE ACCESSIBILITY PERSONA OR DOMAIN EXPERTISE OF THE USER**

### **Introduction**

Traditionally, web accessibility specifications help website developers create interactive web content and applications that are accessible to users with disabilities through the use of accessibility labels. Adding accessibility information also benefits users who do not have a disability. Thus, it is important to provide accessibility information for web content and applications so that users of all abilities can benefit from the website or application. Current web accessibility specifications provide accessibility labels that apply to all users of a website or application equally, so a developer must choose one label that will apply to any type of user with any type of disability or skill level.

However, users of different skill levels or users with different types of disabilities can benefit from different accessibility labels and context, rather than a single label that applies to all users. Selecting only one label is not optimal in cases where it would be beneficial to provide multiple variations of an accessibility label that are targeted to a user based on the user's skill level and disability. Providing users with different skill levels, types of disabilities, and other characteristics with accessibility labels that are targeted to their specific needs will ensure that all users are offered accessibility labels that are most beneficial and useful to them.

### **Summary**

Computer-implemented systems and methods for providing adaptable accessibility labels to web content and web applications with the disclosed technology can be accomplished by selecting labels that are targeted to different cohorts of users based on the user's skill level and disability.

In some instances, a user may be a member of a cohort based on skill level, such as medical doctor, attorney, computer scientist, or mechanical engineer, as well as a cohort based on disability, such as visual impairment, deaf or hearing impairment, motor impairment, or cognitive impairment. A user may configure a user profile to provide a web application with information about the cohorts the user is a member of based on the user's skill level and disability. A user may use a computing device to access web content and accessibility labels for the web content may be selected by referring to the user's cohorts. The web application may change some aspects of the accessibility information provided to the user and adapt the accessibility labels based on the user's cohort or combination of cohorts in order to make the labels more precise for the user. For instance, a user with cognitive impairment may need an alternative set of accessibility labels to specifically help the user, while a user without cognitive impairment would not need such labels in order to understand the web content. Additionally, a user who is deaf but has no visual impairment may understand a different context from different accessibility labels than a user who is both deaf and visually impaired. In these scenarios, there may be multiple variants of a label and the correct labels can be provided based on the user's cohorts.

For example, a user profile may be configured with a user in both the "attorney" cohort and the "deaf" cohort. The web application may change some aspect of the accessibility information supplied to the user by making the labels more precise for a person with deep legal knowledge because the user is in the "attorney" cohort. Additionally, the web application may also change labels on items that need to be expressed in another manner for deaf users, as opposed to the types of changes that would be needed for a user with a different disability, because the user is also a member of the "deaf" cohort.

In some instances, a user may select to view the labels for a specific cohort or for multiple of the user's cohorts. For example, a user in the "deaf" and "attorney" cohorts may have a preference to view the labels for their disability instead the labels for their skill level. In this instance, the system or method may adapt the accessibility information provided to the user by supplying labels that express web content in a way that is beneficial to a person with that disability, rather than the more precise or technical labels that would apply if the user wanted to view the labels for their skill level. In another example, a user may be in the "deaf," "mechanical engineer," and "attorney" cohorts, and have a preference to view the labels for their skill levels instead of their disability. In this instance, the system or method may adapt the accessibility information provided to the user by expressing web content with technical labels that are beneficial to users with the same skill levels as the user. In some instances, the web application may influence the priority of the cohort labels for the user based on the domain of the application. For example, an application with technical information may prioritize the labels for the user's skill level over the labels for the user's disability.

In some instances, a user may not be a member of any cohort based on skill level or disability, or a cohort may not override the labeling that applies to a certain aspect of the web application. In both instances, the system or method may adapt to use general purpose labels to provide accessibility information that applies to any type of user, instead of very precise labels that would be applicable to users of a specific skill level or labels that would assist a person with a specific type of disability. Adding general purpose accessibility labels may also benefit a user who is not a member of any cohort. For instance, a user may not have a disability, but the user may want to turn off the sound emitting from a webpage because they are in a quiet area and will benefit from labels that show an alternative explanation for the sounds on the webpage. In this

way, people with disabilities and people without disabilities would benefit from adaptive labeling of web content and applications by being provided with an enriched experience based on their current needs.

### **Detailed Description**

Figure 1 depicts an example computing system 100 in which systems and methods in accordance with the present disclosure can be executed. The computing system comprises a user computing device 102 containing one or more processors 112, memory 114 which may contain data 116 and instructions 118 configured to carry out the methods disclosed herein, and a user input component 122. The user input component can be, for example, a touch display or physical buttons within the user computing device 102. The computing system 100 further comprises a network 180 and a server computing system 130. The server computing system 130 comprises one or more processors 132, and memory 134 which may contain data 136 and instructions 138 configured to carry out the methods disclosed herein. It should be appreciated that any combination or order of systems and methods disclosed herein can be performed on the user computing device, server computing system, or similar. For example, all processes can be performed on the user computing device 102 or the server computing system 130.

Figure 2 depicts example user profiles 200 that may be configured by the user 202 for adaptive labeling according to the present disclosure. In some instances, the user profiles 200 may be known based on previous knowledge of the user. The user profiles may contain entries for multiple users 202 and for multiple different cohorts 204. The cohorts 204 can be based on the user's disability, such as a cohort for blind and a cohort for deaf, or based on the user's skill level, such as cohorts for medical doctors and for attorneys. A user may configure their profile to place them in one cohort, multiple cohorts, or no cohorts 206. For example, user 1 may be in

cohort 2, user 2 may be in cohort 1, user 3 may be in cohorts 1 and 2, and user 4 may be in no cohorts. The system or method 100 may choose which labels to provide for web content based on the cohorts 204 that are configured for the user 202 in the user profile 200. In some instances, a user 202 may select to view the labels for a specific cohort 204 or for multiple of the user's cohorts 206. For example, user 3 is in cohort 1 and cohort 2, but may choose to view the labels only for cohort 1 instead of the labels for both cohorts.

Referring now to Figure 3, an example embodiment of adaptive labeling of a web application 300 according to the present disclosure. The system or method 100 may select accessibility labels for the user 202 based on the cohorts 204 configured in the user profile 200. The accessibility labels for the specified cohorts are made available for the web application 308 to provide accessibility information to the user based on the characteristics of the specified cohorts for that user 206. For example, user 3 is in cohort 1 and cohort 2, thus the labels for cohort 1 and the labels for cohort 2 are selected for user 3. In some instances, a user may select to view the labels for a specific cohort or cohorts. For example, if user 3 is in cohort 1 and cohort 2 but chooses to view the labels for cohort 1, then only the labels for the cohort 1 will be provided to the web application 308. In some instances, the web application 308 may influence the priority of the cohort labels for the user based on the domain of the application. For example, when the domain of the application is technical and the user's user profile 200 is configured with multiple cohorts, the labels for a cohort based on skill level will be provided to the web application 308 in priority over the labels for another cohort, such as a cohort based on disability.

The general purpose labels 306 are provided to the web application 308 in order to provide labels in scenarios when a user may not be a member of any cohort based on skill level or disability, or a cohort does not override the labeling that applies to a certain aspect of the

application. The web application 308 may use the general purpose labels 306 to provide accessibility information that applies to any type of user, instead of labels based on the user's cohorts (e.g., 302, 304), in either scenario. The general purpose labels 306 may also assist users who are not a member of any cohort, such as a user without a disability, who can use the general purpose labels to turn off the web page sound when in a quiet area.

Figure 4 depicts an example embodiment of a web application 308 according to the present disclosure. A user may configure their user profile 200 to include the user multiple cohorts, for example in the "blind" cohort and the "attorney" cohort. In this example, a user may navigate to a web page that is targeted to attorneys and contains texts and objects (e.g., 420). The "blind" cohort labels 410 and the "attorney" cohort labels 412 are selected based on the user profile 200, and the general purpose labels 414 are provided. The object 420 on the web application 308 can be read by assistive technology that emits a sound 422 reading the label 424 associated with the object to the user 426. The object 420 can be, for example, a button, menu, input, or text on the user interface of the web application 308. The label provided and read to the user 426 contains technical information that an attorney would understand because the user is in the "attorney" cohort and the web application 308 used the "attorney" cohort labels 412. In some instances, a user may not be a member of the "attorney" cohort and will instead receive different labels for the object 420, such as the general purpose labels 414. In this example, a user profile 200 is configured for a user who is only in the "blind" cohort, the user navigates to a web page that is targeted to attorneys and contains texts and objects (e.g., 420), the system or method selects the "blind" cohort labels 410 and general purpose labels 414, and assistive technology allows the user 426 to hear the general purpose label "button name file" instead of the technical information that the attorney would have heard (e.g., 424).

Figures

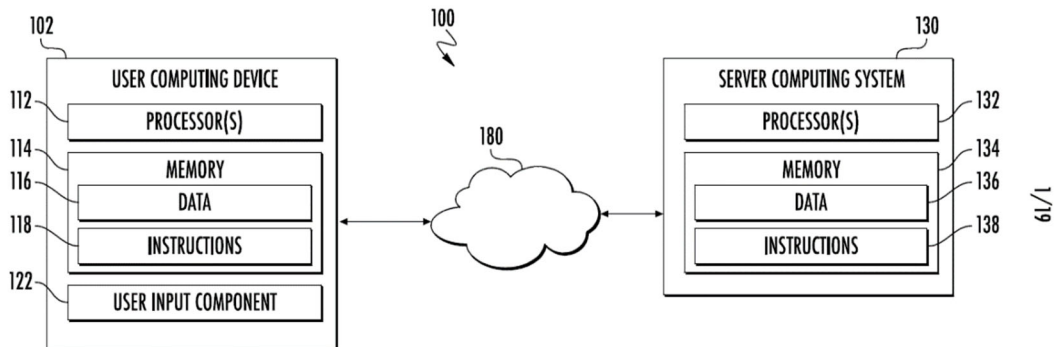


FIG. 1

200

204

User	Cohort 1	Cohort 2	...	Cohort 10
User 1	...	Y	...	
User 2	Y	...	...	
User 3	Y	Y	...	
User 4			...	
...	...	...	...	...
User 10			...	

202

206

FIG. 2



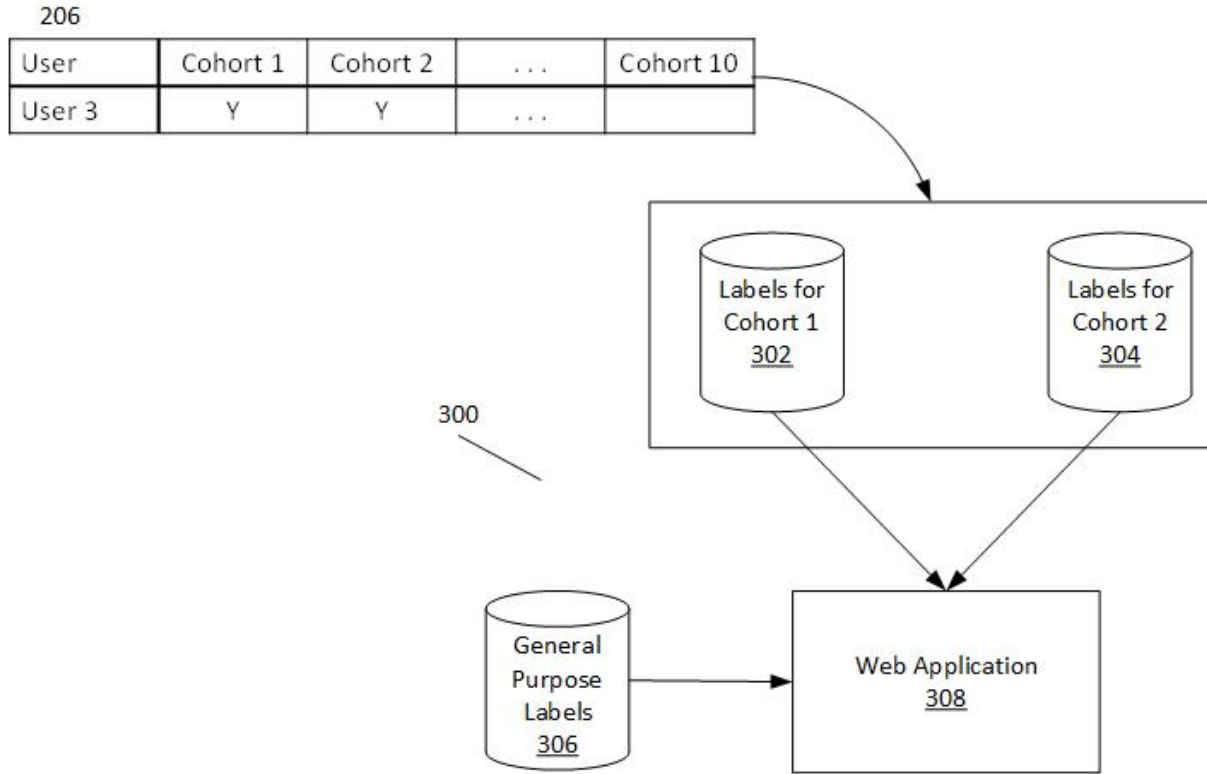


FIG. 3

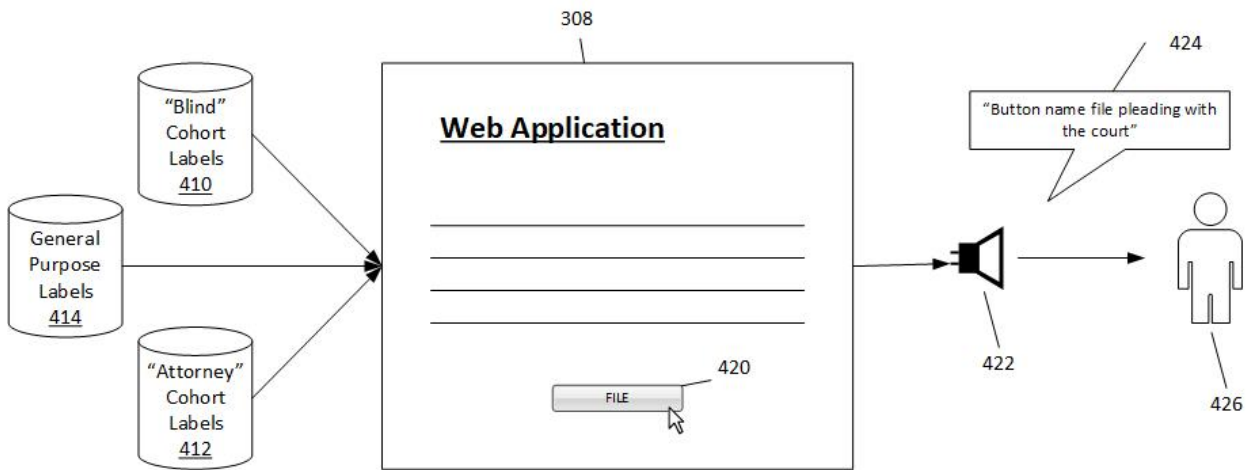


FIG. 4

## **Abstract**

The present disclosure describes computer-implemented systems and methods for providing adaptable accessibility labels to web content and web applications by selecting labels that are targeted to different cohorts of users based on the user's skill level and disability. Accessibility labels that are targeted to the user's skill level and disability are selected from multiple variants of labels and provided to the user to help the user understand the application better than with the general labels that apply to all users regardless of skill level or disability.