

## **Usability Enforcer and Dottie Software Tools: Promoting E-Government Accessibility for Older Adults**

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### **Automated Support**

Several software tools are demonstrated that have been developed with the objective of making Web sites more accessible to adults sixty years or older. The Usability Enforcer tool dynamically transforms a Web page into a more usable one by applying rules associated with usability and accessibility guidelines from previous research. The DOTTIE tool provides a report of HTML source code violations by applying the Web accessibility guidelines for older adults, as specified by the National Institute on Aging. These tools may be downloaded at: (<http://www.cba.nau.edu/facstaff/becker-a/Accessibility/main.html>).

### **Usability Enforcer Software Tool**

The Usability Enforcer software tools dynamically transforms a Web page into one that is accessible for older adults by applying predefined usability rules. The tool also generates HTML source code that could be readily used by a developer to improve the design of a Web page. The tool integrates the open source Tidy tool (<http://tidy.sourceforge.net/>) for converting messy HTML source code into structured markup.

The Usability Enforcer has tool properties all of which provide the basis for Web page transformation. The first property group is the “user profile” providing the tool information about the targeted user for whom the Web page is transformed. User profile data includes the age group, color deficiencies (e.g. Deuteranopia), and other user characteristics that might impact Web usability. The second property group is the “computing environment” providing information about the computing system for which the Web page is being transformed. These characteristics include connection speed, display device, HTML browser, operating system, and screen resolution. The third property group supports user specified settings such as font color, type, weight, and style. This is particularly important for users with varying degrees of color deficiency for which certain color combinations make Web use difficult. The fourth property group supports internal settings and controls such that a Web page is transformed based on developer preferences or internal decisions made by the tool. A setting change by the Usability Enforcer tool produces “change log” documentation for the developer’s use.

### **Dottie Software Tool**

The objective of the Dottie software tool is to automate the validation of a Web page for compliance with many of the National Institute on Aging guidelines for Web accessibility for older adults. Once a Web page is checked, a report is generated that lists each violation of the guidelines along with the source code line number. A Web developer uses this report to review and fix source code in order to make a Web page more accessible to an older adult. This is an important feature of Dottie because most government agencies do not have the time or the resources to manually search a Web page for accessibility improvements.

The current version of the Dottie tool checks a Web page for the use of serif typeface, italics, boldface, and upper case in the text body because of their potential impact on readability. The tool also checks the text content for font size, text justification, the use of background images, and text decoration (e.g., strikethroughs), as these too may have an impact on the readability of a Web page for the targeted user.