Project BlindFaith - Webbased, Privacy Enhancing Technology for visually impaired and blind people

Project duration: 1. December 2014 – 30. November 2015

Accessible Privacy Enhancing Technology – Interaction-Design and Guidelines

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1. From Interaction-Design to Guidelines

In strong collaboration with blind and visually impaired Internet Users we developed feedback-strategies and interaction-design for an accessible Tracking Blocker. A Tracking Blocker is a Privacy Enhancing Technology that protects and informs about hidden trackers and services that try to collect data in the background.
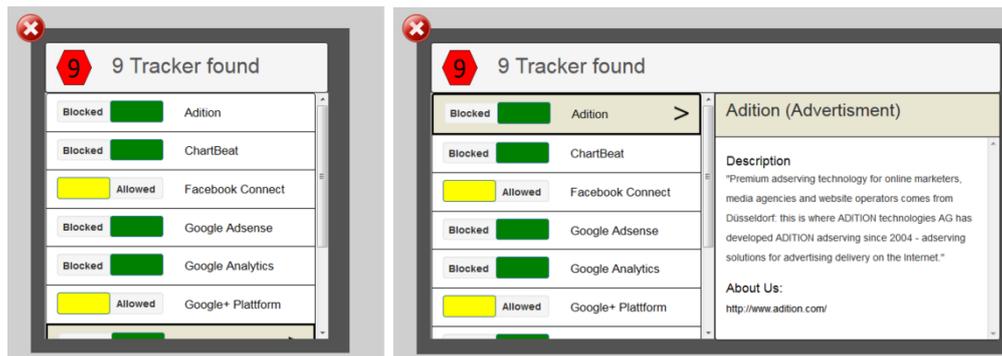

Figure 1: Interaction-Prototype (a) List of Trackers (b) Additional Information

Interaction-design was evaluated in a study with blind and visually impaired Internet Users. The results of the study have been used to transform the interaction design into concrete guidelines for development of accessible tracking blockers. The guidelines for control of blocked trackers, acoustic and visual warnings, personalization and information are listed in the following sections. The Guidelines are provided under the license CC BY-SA 2.0 DE[1].

2. Control

- Users must be able to define if a tracker is blocked or allowed, as some services (e.g. social media plugins) want to be used although privacy concerns exist. Settings should be set globally but must be changeable for certain sites.
- For blocking / allowing trackers the usage of toggle buttons is recommended. The toggle button should provide the state through position and color and must also provide a meaningful description of the state to the screenreader. For example this can be solved as seen in Figure 1a.
- Keyboard operation must be available for all options to allow for quick manipulation and access using keyboard based assistive technology (e.g. screenreader).

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[1] https://creativecommons.org/licenses/by-sa/2.0/de/

3. Auditive Warnings

- Acoustic feedback was preferred by blind participants.
- A short, concise tune shall be played which informs if a tracker was detected and / or blocked.
- The tune must not be too intrusive, and it must be possible to deactivate acoustic feedback in the personalization settings.
- Feedback should be realized using different sounds (e.g. different instruments), Combinations of tunes e.g. third, quart, etc. was not sufficient.
- Similar to a traffic light, participants argued for three levels of feedback (harmless, critical and dangerous)

4. Feedback

- Similar to a traffic light, participants argued for three levels of feedback (harmless, critical and dangerous)
- Visual Feedback was preferred by partially sighted participants.
- Visual Feedback can be provided through different symbols. Similar to traffic signs, the symbols suggested / preferred by the users were a circle, a triangle and a hexagon. Visual feedback can and shall be complemented by color, but is important to notice, that color must not be the only distinguishing criterion. Thus the shape plays an important role. Participants argued for three shapes to represent the three feedback states. See Figure 2.
- Visual Feedback must provide a sufficient contrast between the feedback and the background, a contrast ratio of 4.5 to 1 is needed to fulfill WCAG guideline 1.4.

Figure 2: Examples of Symbols for Visual Feedback

5. Personalization

- Users must be able to choose the desired feedback modalities. For example acoustic feedback was preferred suggested by blind users, whereas partly sighted users considered it as annoying. Also feedback should be presented on different channels, if desired

- Users must be able to select the occurrences of warnings. Some users preferred to be warned only on critical and dangerous sites) whereas other users wanted to get feedback on all sites. On the one hand to get active informed that a site is harmless and also to get feedback, that the tool is working.

6. Information

- Users prefer little automatic information, but the possibility for quick access to further information. Feedback must not disrupt the user's workflow.
- A two stage feedback process was rated positive. By using a keyboard shortcut it should be possible to access quick information. By using the same shortcut within a defined time, further detailed information should be provided. Users argued for using the same keyboard shortcut twice (instead of two different shortcuts), as users of assistive technology have to already remember a lot of combinations.
- Moreover users shall be able to choose the keyboard shortcuts, as assistive technology often already uses / "blocks" certain key combinations.
- Information should be available in different languages. English information only was not considered as sufficient by the users.