Chapter 7
Integrating Accessibility Evaluation into Web Engineering Processes

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ABSTRACT
This chapter presents methodologies and techniques for performing accessibility evaluations on web applications. These methodologies are discussed in the context of performing them within a web engineering process, be it a traditional, unified or agile process. In this chapter the case is made that website commissioners and web engineers cannot afford to overlook accessible practices as they risk alienating an increasingly large user base who may require accessible web features.

INTRODUCTION
Accessibility is becoming a required feature of web applications for commerce, health care and government. For website commissioners and engineers who are unfamiliar with it, accessibility can be a word that conjures up spectres of legal obligations, litigation and increased costs in development. For those who are familiar with the technical side of accessibility, images of long documents of guidelines, regulations and criticisms of both are come to mind. Finally, for people with disabilities, accessibility can inspire either dread, due to the current state-of-the-art in accessibility in web technology, or hope, for the future of web applications, or both.

Faced with all of these views, what are web engineers to do? Many want to make their applications available to as many people as possible; however, just as many have thrown up their hands in dismay at the current perceived state of acces-
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Accessibility, and the seeming impenetrability of the process. These web engineers often take the road of conformance with guidelines and checklists, a route that does not necessarily guarantee accessibility (DRC, 2004). While this is often the route that leads to the largest acceptance within an organization, there are larger implications to the website engineer of which they should be aware. An inaccessible website has the potential to alienate a large audience that the organization could reach to offer their products and services. As a result, managers, designers and developers all must be concerned about accessibility itself, not just guideline conformance.

The goal of this chapter is to present the concept of accessibility and what it means to the web engineer. In particular, it will focus on the development and evaluation of web applications for accessibility, ensuring that the largest number of people of the web audience can use them.

This chapter will present the relationship between usability, a concept well understood by the web engineering community, and accessibility. It will discuss how these two concepts interact, and how they are achieving the same end goal: allowing users to use web applications.

In the sections following, the authors have chosen to ignore conventional wisdom regarding discussing web problems via guidelines, check-points and specific technologies. Instead, the focus is placed on the users and their interactions with web applications. After all, technology continues to change, but humans change very slowly, and the challenges and issues associated with accessibility will remain long after the current crop of web technologies is gone.

The chapter will present different types of evaluation available to the web engineer: expert inspection, automatic tools and user evaluation. An analysis of where these evaluation processes can be applied in web engineering processes is discussed as well as structured unified processes and flexible agile processes.

BACKGROUND

In order to understand the techniques discussed later in this chapter, it is important to understand what accessibility is and why it is important. This chapter presents several different views of accessibility. This is followed by a discussion regarding why accessibility is a factor that must be considered by the web engineer and website commissioners. Hereafter, a web site consists of many interconnected web pages all belonging to the same domain address. Further, a web application is a website that has interactive components for completing complex tasks.

The Accessible Web versus the Usable Web versus Using the Web

With web engineering being focused on the design and development of both content and structure in websites, it is perhaps unsurprising that usability is well represented in the web engineering literature and in experience reports (Mariage & Vanderdonckt, 2005; Martens, 2003; Agarwal, 2002; Becker, 2002; Palmer, 2002; Ivory & Hearst, 2001).

In general, it is reasonable to say that the web engineering community has taken on board the concept of usability, addressing different aspects of effectiveness, efficiency and satisfaction (Shneiderman, 1998). In comparison, the uptake of accessible design and evaluation slow to come into common practice. In some cases, this is a result of the definition of accessibility being unclear and at times contradictory, making it difficult for web engineering teams to adopt a culture of accessibility. Petrie and Kheir (2007) provide an extensive discussion of these definitions a portion of which is included here for completeness.

In this chapter, technical accessibility refers to the checking of features of a website for conformance against a set of guidelines specifying what is and what is not accessible to people with disabilities (Petrie and Kheir, 2007). The guidelines typically used for such evaluations are the
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