Chapter 1
Towards a Characterization of the Developmental Environment of Web Applications and its Business Implications

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ABSTRACT

The Web has been changing since its inception. In particular, the evolution of the developmental environment of Web Applications has been multi-directional. This chapter provides a conceptual characterization of such technical directions, relationships between these directions, and their implications towards business organizations. The consequences of a commitment to these directions are considered with the support of examples and/or empirical studies as appropriate. The challenges faced by Semantic Web Applications and Social Web Applications are briefly outlined.

INTRODUCTION

The Internet, particularly the Web, has opened new vistas for many sectors of society and over the last decade has played an increasingly integral role in our daily activities of communication, information, and entertainment. The use of the Web has changed people's behaviors, in some cases indispensably and even irreversibly.

It is evident that conventional business practices that apply to one product cannot be simply mapped to another without first understanding the nature of the product, and the same applies to Web Applications. This chapter identifies and elaborates unique characteristics in the developmental environment of Web Applications. It also

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considers the implications of these characteristics on users and towards different aspects of business organizations including transfer of knowledge and management.

The rest of the chapter is organized as follows. First, the background and related work is presented. This is followed by an exploration of a list of characteristics that uniquely posit the nature of Web Applications. Next, challenges and directions for future research are outlined. Finally, concluding remarks are given.

BACKGROUND

In this section, the basics of Web Applications that are relevant for the rest of the chapter are provided. The people who have a stake in a Web Application are outlined, and previous work on characterizing Web Applications is discussed.

Basic Terminology Related to Web Applications

For the sake of this chapter, a *Web Application* is defined as a Web Site that behaves like an interactive software system specific to a domain and typically requires a non-trivial infrastructure for development. This infrastructure may include a disciplined and systematic development process, a team with high-level of knowledge and skills, deployment of additional software on the client- and/or server-side, and a schedule comprising of several weeks or months from inception to completion.

The use of a Web Application has evolved from its origins in the mid 1990s. It has been shown in empirical studies (Weinreich et al., 2008) that, instead of merely seeking information, users now also expect to be able to interact with a Web Application to carry out certain tasks. This in turn has had an impact on how Web Applications are perceived, developed, and managed.

For the sake of this chapter, *Web Engineering* (Mendes & Mosley, 2006) is a discipline concerned with the establishment and use of sound scientific, engineering and management principles and disciplined and systematic approaches to the successful development, deployment, and maintenance of 'high-quality' Web Applications.

Stakeholders of Web Applications

A *stakeholder* is a person who has interest in a Web Application for some purpose. For the sake of this chapter, the stakeholders of Web Applications are broadly classified into *producers* and *consumers*. The producers are responsible for server-side concerns of a Web Application; the consumers are receivers on the client-side of a Web Application. For example, business executives, project managers, and software engineers belong to the category of producers; beginner and advanced users belong to the category of consumers.

It is possible to devise more sophisticated stakeholder classification schemes based on other criteria. For example, stakeholders could be classified based on their degree of influence (Alexander, 2005) on a Web Application. However, doing so is beyond the scope of this chapter.

It is evident that the stakeholders of Web Applications are diverse. For example, there can be anthropological differences, cultural differences, and differences of personal preferences among stakeholders. These can be relevant to the development of Web Applications that aim to target a diverse audience.

Related Work on Characterizing the Development of Web Applications

In this section, a chronological account of previous work related to this chapter is presented. A model for characterization of Web Applications has been given (Lowe, 2002). However, details of individual characteristics are not given and the discussion is relatively dated.

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