Web Engineering: A Practitioner’s Approach

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Roger S Pressman, and David Lowe
Web Engineering: A Practitioner’s Approach
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Web Engineering is a new engineering discipline that emerged to deal with proposing and developing efficient, effective, and reliable framework for building cost-effective and successful Web-based applications and systems (WebAppSyss). A Web application (WebApp) symbolizes the vehicle that acquires information, structures it, builds a packaged presentation, and delivers it, while a Web system (WebSys) represents the client-server hardware, operating systems, network software, and browsers. With the enormous development and advancement in computer hardware and software, telecommunication, and Internet systems, WebAppSyss have become an indispensable technology for business, commerce, communication, education, industry, government, and to all areas that may affect our social life.

The next generation of WebAppSyss pose many challenges to all those who involve in the development processes, and the old approach of development that relies heavily on a combination of informality, urgency, intuition, and art is not suitable for utilizing current technologies and meeting user requirements. Therefore, it is important to develop a standard framework for building such WebAppSyss. Unfortunately, in spite of the importance of Web Engineering, very few books have been written to provide students, researchers, and professionals with their needs in this new evolving discipline.

Web Engineering: A Practitioner’s Approach by R. Pressman and D. Lowe has been written to reduce the gap between this new discipline and its users through providing an introduction and enlightenment to the concepts, frameworks, and methodologies of Web Engineering. However, the book is mainly concerned with the engineering of WebApps. It discusses an agile and adaptable incremental approach to the development of WebApps that are more complex, more functional, and more significant. The book helps understanding the technical methods that will lead to build high-quality and cost-effective WebApps in a minimum period of time, and also provides the tools needed for designing and implementing a reliable Web Engineering process. The conversational style of using a question and answer format to guide the reader in this new engineering discipline is highly credited to the book. In addition, the book

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examines important concepts and illustrates critical management and technical methods through a running case study, which could be much healthier if that is being done through different case studies.

The book provides an environment for advancing the readers’ scientific state of knowledge in all areas of Web Engineering through its extensive use of the concepts, terminologies, and methodologies that are exploited in Software Engineering and Information Technology Project Managements. The book was written in 17 chapters, covering almost every important aspect of WebApps development processes, such as requirements gathering and analysis, design, testing, project planning, change and content management.

Chapters 1 to 3 provide an introduction to the concept of Web-based systems, Web Engineering, and Web Engineering processes. Chapter 4 discusses the concept of communication activity during the Web Engineering process by dividing it into three actions: formulation, elicitation, and negotiation. In Chapter 5, the book presents the methodologies and tools that can be used to explore how to establish a successful plan for deploying a WebApp task. The chapter assists the reader in understanding what communication work products are relevant, what to do if further details are required to understand the tasks, and what to do if gaps still exist in understanding the WebApp. It also discusses the appropriate way for quality assessment, building Web Engineering team, project schedule development and tracking. Furthermore, it provides some practical guidelines for how to perform efficient management to all project requirements, resources, and activities.

Chapters 6 and 7 converse the modeling activity and analysis during a Web Engineering process. It explains how to create and analyze one or more conceptual representations of some of the aspects of the Web Engineering process. It also presents a brief description for the main features of modeling languages and approaches. The design activity for WebApps is discussed in Chapters 8 to 11. Chapter 8 introduces the design process and its characteristics, and outlines the elements of WebApp design and design goals. The design process is divided into three parts; these are interaction design, information design, and functional design, which are discussed in Chapters 9 to 11, respectively.

Chapter 12 presents the construction and deployment activity of WebApps, where it elaborates on the interplay between construction and deployment, and the role of deployment environment on the performance of the application. It also explores some generic set of construction and deployment tasks, and the principles that should guide the Web Engineering team during this important phase of the Web Engineering process. The definition of the concept of a design pattern, how does it look, WebApp patterns, pattern repositories, and a number of example patterns, are presented in Chapter 13.

Chapter 14 briefly discusses the general issues of the Web Engineering technologies and tools. In this chapter Web Engineering tools and technologies are categorized into implementation and development. Chapter 15 introduces another Web Engineering activity, which is testing WebApp. It introduces the testing concept, what testing strategy should be applied to the WebApp, how much test planning is necessary. In this chapter, the testing process is classified into a number of distinct tests, these include: content, user-interface, usability, compatibility, component-level, navigation, configuration, security, and performance tests.

Change and content management is one of the important features of WebApp; this is discussed in Chapter 16. Reading this chapter provides the reader with answers to a number of questions regarding change of WebApp, such as what are the attributes of a change, why changes are requested, and what elements of the WebApp change. Furthermore, it introduces why do we need change management, how should we identify the objects that will change, and how should a Web Engineering team control a change and ensure that a change has been properly implemented. For the content management, it discusses many issues, such as how is
a content management system (CMS) used and what are the major elements of it. The chapter also pointed-out the criteria for implementing a CMS. Finally, Chapter 17 thrashes out the future directions of the Web, WebApps, evolving Web technologies, and Web 2.0. The chapter also presents some key issues that should be considered as technology evolves.

Some related points believed to be missing or weakly discussed in this book, such as: discussing the tools and implementation techniques, identifying some performance measures and evaluation techniques, identifying the critical issues during the development process and risk evaluation, and how the proposed techniques are compared with other exist techniques.

No doubt authors had put great and appreciated efforts to end-up with such a reference for Web Engineering. However, the book does not introduce new concepts in the field of Web or Software Engineering, rather it is a manipulation and an adaptation of well-defined terminologies, processes, and methodologies that are widely-used in Software Engineering and Project Management areas to suit the WebApps development process. Therefore, we afraid that in future we may see new similar engineering disciplines, such as Database (DB) Engineering, Artificial Intelligence (AI) Engineering in which the phases of the Project Management and the methodologies of Software Engineering are applied to the DB or AI systems development processes.

In spite of the above criticisms to the book, it is still very suitable to be used as a learning text or reference for professional WebApps developers and as a teaching textbook for undergraduate and postgraduate courses where one is concerned with the different phases of the Web Engineering process.

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