Chapter II

Web Engineering Resources Portal (WEP):
A Reference Model and Guide

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Abstract

This chapter introduces the Web Engineering Resources Portal (WEP) as a basic reference model and guide for Web Engineers. WEP provides a general classification of Web Engineering resources under technologies, research results, and tools. It consists of a reference model and a resources portal. The objective of the WEP reference model is to provide a common basic terminology, a technical-oriented classification of Web applications (WebApps), a specification of WebApps Logical and Physical Architectures, a classification of skills needed in Web projects and a generic and adaptable Web lifecycle process model. The WEP reference model provides the framework upon which Web Engineering resources are classified and presented. The WEP portal provides several and cross-referenced taxonomies of technologies, research results, and tools whereas its objective is to facilitate Web Engineers to comprehend available resources, understand their role and appropriately use them during development and operation/maintenance of Web information systems.

Introduction

Web Engineering is defined in Deshpande, Murugesan, Ginige, Hansen, Schwbe, Gaedke and White (2002), by experienced researchers in the field as: "The application of systematic, disciplined and quantifiable approaches to development, operation, and maintenance of Web-based Information Systems (WIS). It is both a pro-active approach and a growing collection of theoretical and empirical research in Web application development." In the same work, Web engineering is essentially defined as "matching the problem domains properly to solution methods and the relevant mix of technologies" (Deshpande et al., 2002).

But, what is WIS[1]? Holck (2003) provides a good survey of WIS definitions around the literature, where there is some confusion because of diverse perspective and terms used. Thus, we conclude that the first thing Web Engineers really need is a common terminology on WIS and its components. To address this need, we include in the WEP Reference Model a specific part entitled: *WEP-Terms: WEP Basic Terminology & Definitions*. We replicate the definitions of WIS and Web applications here as well.

WIS is an information system utilizing Web technologies to provide information (data) and functionality (services) to end-users through a hypermedia-based presentation/ interaction user interface on web-enabled devices.

WebApps are the different functionality-oriented components of a WIS. A WebApp is actually a small-scale WIS, providing very specific information or functionality. Many developers use these terms as synonymous, especially for small WISs.

Moreover, we define the "planning, development, operation, and maintenance of WIS" as a *Web project*. Basically, it is a lifecycle process model to ensure successful WIS development and evolving through a number of stages from investigation of initial requirements through analysis, design, implementation, testing, and operation/maintenance.

In each stage, the process model specifies the activities that are carried out, the relationships between these activities, the skills needed (roles), the resources that are used, the results that are created, etc. The activities are carried out by teams of developers who are based on selected *Web technologies*, take advantage of selected *research results,* and use a number of *tools*. This triplet constitutes the Web Engineering Resources (WER), which includes anything available to developers to support the Web project. Figure 1 shows how they are produced and related to each other. However, WERs are not easily discoverable and understandable by developers, so they are often not used appropriately or at all during the Web projects for reasons outlined in the next section.

The main objective of this chapter is to put Web Engineering Resources in use and to provide a reference model and guide for Web Engineers. We call it the Web Engineering Resources Portal (shortly WEP), because it provides several and cross-referenced taxonomies of these resources, just like an information portal does. WEP provides a WEP reference model and WER portal. The *WEP reference model* includes:

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