Chapter XXI

The Use of Metamodels in Web Requirements to Assure the Consistence

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ABSTRACT

The increasing complexity and the many different aspects that should be treated at the same time require flexible but powerful methodologies to support the development process. Every day, the requirements treatment in Web environments is becoming a more critical phase because developers need suitable methods to capture, define, and validate requirements. However, it is very important that these methods assure the quality of these requirements. The model-driven engineering is opening a new way to define methodological approaches that allow control and relate concepts that have to be treated. This chapter presents a Web methodological approach to deal with requirements, NDT (navigational development techniques) based on model-driven engineering. As it is presented, NDT proposes a set of procedures, techniques, and models to assure the quality of results in the Web requirements treatment.

INTRODUCTION

Since The Net of Nets was born in the 1970’s, as a net to spread research material, an amazing change in the use of the Internet has taken place (Cazorla & Carrasco, 2001). In the last years, the Internet and hypermedia developments have become a popular tool, and the number of users who work with it every day has grown crazily. For companies and organisations, the Internet is a suitable way to promote their businesses, as well as a powerful way to contact with their clients and employees all over the world.

Since the development of hypermedia systems in the Internet appeared, the research community has detected the need to propose new methodologies, techniques, and models in order to offer a suitable reference environment for the new and special characteristics of the Internet. That is why, in the last few years, a new research line in the software engineering has been developed: Web engineering. Web engineering is the systematic, structured, and quantifiable application of methodological proposals to the development, evaluation, and maintenance of Web applica-

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At first, the development of Web systems was an ad hoc process. Applications were developed without following any structured process to guarantee the quality of the results. When the Web engineering appeared as a new research line, several new methodological approaches were proposed, and some surveys and comparative studies agreed that it was necessary to offer new methodological environments to deal with the special characteristics of the Web (Barry & Lang, 2001; Koch, 2001; Lang, 2002; Retschitzegger & Schwinger, 2000).

Nowadays, all over the world, the research community accepts the idea that Web projects have special characteristics (critical navigation, hypermedia, customisation, etc.) which must be carefully dealt in the life cycle and which need their own models and techniques (Deshpande et al., 2002).

In the first approaches, the most treated phase was the design phase. However, in the last few years, the research community has detected the importance of requirements. Approaches for Web requirements have to offer suitable environments to define, capture, and validate requirements. But they also have to offer appropriated ways to assure the quality of results. In order to get these aims, the research community is proposing the use of model-driven engineering (MDE) (Schmidt, 2006). This chapter starts with a short survey of Web methodologies, and it analyses the importance of requirements. In the third section, an approach based on model-driven engineering NDT (Navigational Development Techniques) (Escalona, 2004) is presented, and practical advantages in the use of model-driven Web engineering are analysed. In the fourth section, some related works that are offering model-driven applications in the Web engineering environment are presented. And, finally, the chapter ends with some conclusions and future works.

WEB METHODOLOGIES

In the last few years, the growing interest in the Internet has led to the generation of a high number of proposals which offers a frame of reference for the Web environment. Figure 1 shows the most representative ones in chronological order.

In the picture, the continuous lines indicate that the most recent methodologies are based on, or receive the ideas from, the previous ones. The dashed lines link the methodologies which have a same author.

Figure 1. Web methodologies