Preface

The evolution of the Information Technology in the last years has seen the World Wide Web transforming from a read-only hypertext media into a full-fledged, multi-channel and multi-service application delivery platform. As a consequence, there has been an evolution from simple, static Web sites to complex, data-intensive Web applications. As for the development of such Web applications, the described evolution demands for appropriate development methods, able to cope with the growing complexity and the specific peculiarities of such new generations of Web applications. It is the field of Web Engineering that addresses this demand and that aims to develop systematic methodologies and solutions for an efficient development process for modern Web applications.

Also, with the advent of new and powerful mobile devices, the Web is addressing a continuously growing number of users and is more and more pervading our everyday life. In this regard, the need to improve the user's browsing experience, e.g., by adapting the application to user preferences and device characteristics, has become manifest. Personalization and adaptation to preferences and devices have already proved their benefits for both application providers and content or service consumers.

Similarly, context-awareness and more flexible adaptation mechanisms are increasingly becoming key factors to enhance both the effectiveness and the efficiency of the Web applications of today and especially of tomorrow. "Context-awareness" is intended as capability to take into account whichever properties or information that characterize the interaction with the application, i.e. the context, and to react to changes that such properties or information may experience during the use of the application. Reactions, i.e. application adaptations, are therefore not anymore based on the sole user preferences and device characteristics, but more in general on any property that characterizes the context of the interaction. Typical application adaptations in Web applications are, for example, the adaptation of contents or hyperlinks, the execution of operations or services, or the adaptation of presentation or style properties.

In line with these considerations, this book puts its focus on the development of context-aware and adaptive Web applications. As answer

to the challenge faced by the Web Engineering field, the book proposes a conceptual, model-driven method for the design of context-awareness and adaptivity in Web applications. The proposed method is achieved by extending an already established conceptual modeling language for Web application design, i.e. the Web Modeling Language (WebML), also providing for the automatic generation of the application code. The proposed design model reflects a conceptualization of problems and solutions deriving from the use of context-aware and/or adaptive features in the domain of the Web, thus representing a comprehensive instrument covering the main requirements in the design of context-aware Web applications.

This book describes one of the first methodological approaches to context-awareness and adaptivity in the field of Web Engineering and is based on my dissertation entitled "Model-Driven Design of Context-Aware Web Applications", published in 2007 in Politecnico di Milano, Italy. The dissertation is one of the first attempts to enlarge the applicability of adaptive application features in the Web from "adaptive hypermedia systems" to "context-aware Web applications". While the former typically are based on a user model that is dynamically updated based on the observation of the user's navigation actions, the latter may be based on a more complex context model and active, context-triggered application features. Although the research described in this book is applied to the WebML method, its general nature also contributes to the advancement of the Web Engineering field in general.

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Contents