Chapter 4
Important Factors on RIAs Development

ABSTRACT

Chapter 4 discusses some software quality metrics such as usability, scalability, and reusability of RIAs development. The chapter describes the importance of using multimedia content and UI (User Interface) patterns not only for improving the appearance of RIAs but also for delivering rich user experiences. Likewise, this chapter depicts the importance of leveraging AOP (Aspect-Oriented Programming) capabilities and implementing design patterns to ease the RIAs maintenance and enable RIAs reusability. In this chapter, four concepts about Web development and RIAs development were selected. These concepts are Multimedia Support, AOP Support, Design Patterns Support, and UI Pattern Support and are described in detail in this chapter.

1. INTRODUCTION

Clearly, the use of RIAs (Rich Internet Application) provides several advantages. Users’ experience in the use of applications is improved since RIAs applications are very easy to use. Moreover, Rich Internet Applications also offer ameliorations in terms of connectivity, instant display of the applications, and access speed. However, one of the most remarkable characteristics of RIAs is the fact that installation is not required. RIAs merely require refreshing the browser so that applications are automatically updated to new versions. In comparison with the use of executable programs, this characteristic greatly diminishes the risk in computers of being infected by viruses. Finally, RIAs also cater for a better capacity of response, since users are able to interact with the information without reloading the website. Currently, several companies – such as Flickr™ or Gmail™ – are focusing on RIAs development.

There exist four highly important aspects of RIAs. These aspects are:

- **Scalability**: Scalability is a complex concept to define in the field of computer systems. It basically refers to a system’s ability to grow and be adapted to changes. Nowadays, it is important to consider the scalability of systems. This would permit to foresee and be prepared for any eventual change in any system. The use of AOP
(Aspect-Oriented Programming) provides remarkable benefits in terms of scalability, since AOP is a type of programming which facilitates the introduction of new functionalities and modifications into already-developed systems.

- **Usability**: In terms of computing, usability refers to the ease with which people are able to interact with software systems; it involves concepts of HCI (Human-Computer Interaction). In order to achieve usability, the systems designed must facilitate the exchange of information between machines and people. One way of promoting this kind of information exchange is through efficient and easy-to-use User Interfaces (UIs). These types of interfaces are developed using User Interfaces Patterns (UI-Patterns) that favor friendly UIs and, therefore, improve the usability of both software systems and RIAs.

- **Support for Different Types of Contents**: The content of a RIA refers to information that is directly provided to the user and contains the message to be transmitted. Therefore, support for different kind of contents is of great importance in RIAs development. Contents can range from text, images, videos, or animations, among others. Multimedia contents are so important today that several websites exclusively dedicate to the transmission of this kind of content. For instance, Youtube™ focuses on video transmission, while Flickr™ is a website for image hosting, sharing, and posting. Although multimedia content may be varied, videos remain the most popular since they can include images, text, audio, and animations, which are also other forms of multimedia content.

- **Reusability**: As its name suggests, the concept refers to the ability to reutilize one part of a software system in order to use it differently within the same system, or build a new system. A quite straightforward way to implement reusability in RIAs is through the use of design patterns. In fact, some design patterns rely on reusability by default. For instance, Façade is a pattern whereby information can be differently presented merely by switching the interfaces and reusing functionalities. This is particularly useful in graphic design.

These four aspects are remarkably important for RIA’s development. They provide RIAs a better appearance and offer new functionalities, such as a more efficient capacity of response and interactivity.

The present chapter describes each of the four concepts abovementioned; both their importance and usage are explained.

### 2. MULTIMEDIA SUPPORT ON RIAS

Integration of multimedia content is currently a key issue in the development of traditional Web applications, and consequently in Rich Internet Applications development. Multimedia refers to the “diffusion of information in more than one way, including the use of text, audio, graphics, animated graphics, and video” (Freedman, 1999). According to this definition, multimedia involves different types of information; however, videos are the most used type of content since it can include other types of information such as images, audio, and text.

Etymologically, the word *multimedia* means “multiple media,” and in terms of information technology, it refers to the existence of “multiple intermediaries between the source and the destination of the information, that is, that various means are used to store, transmit, display or receive information”. In other words, multimedia refers to any combination of text, audio, and images. From this perspective, a television or a newspaper would be considered a multimedia device. However, in the
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