

Chapter 1

Basic Concepts on RIAs

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ABSTRACT

This chapter presents an overview of RIA features, and it explains the most important concepts for RIAs development, as well as their benefits and importance in several domains. In this chapter, a standard architecture for RIAs is described. This architecture has three well-defined layers: 1) the client-side that renders the rich user interface, 2) a controller layer where the business logic is executed, and 3) a data transactions manager. Important domains of Web development are presented, and in each one of them, the importance of RIAs is explained emphasizing particular features of each domain. Finally, experiences and successful stories of using RIAs in B2C e-commerce domain are presented.

1. INTRODUCTION

The Web or WWW (World Wide Web) is an information distribution system comprised of interlinked hypertext or hypermedia accessed by using the Internet. To access these media, a Web browser is required. The user is able to view different websites, which are composed of web pages that can contain text, images, videos or multimedia content. The user can browse the web pages that make up the website, through hyperlinks which cause a great amount of traffic between the client and the server as every time the user clicks on one of the hyperlinks. So, the whole page is loaded when the user requires some data or some interaction, this task implies to make another request from the server which causes the data can be slowly displayed. This slowness is increased as the amount of data requested is increased. The Web was created in 1989 by the Englishman Tim Berners-Lee and the Belgian Robert Cailliau, while they were working at CERN (CERN means European Organization for Nuclear Research) in Geneva, Swit-

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zerland and it was published in 1992. Since then, Berners-Lee has played an active role in guiding the development of Web standards and over the last few years he has focused his vision on the Semantic Web.

In recent years, the term Web 2.0 has emerged. This term is associated with Web applications that make them easier to share information, interoperability, user-centered design and the collaboration with the World Wide Web. Some examples of Web 2.0 applications are Web communities, Web services, social networks, web sites that host videos, wikis, blogs, mashups and folksonomies, to mention but a few. The term is strongly associated with Tim O'Reilly, due to this term was coined at the conference about Web 2.0 from O'Reilly Media in 2004 (O'Reilly, 2004). Although the term suggests a new version of the World Wide Web, it does not refer to an update process of technical specifications over the Web, but rather it refers more to cumulative changes in the way in which the Web is used by designers and final users.

Among the characteristics of web applications, there are some advantages over desktop applications. Some of these advantages are: 1) it is not necessary to carry out installations and updates on every computer where the application is running, these can now be carried out on the server-side and 2) they can run on different operating systems, which are well-known as platform-independent, cross-platform or multi-platform. However, there are also some disadvantages for these types of applications: 1) there is no immediate response to the acts, actions or events carried out by the user on graphical interfaces and 2) it is not possible to drag and drop documents, texts, images or any multimedia content.

RIAs (Rich Internet Applications) become a necessary way of increasing the advantages and avoiding the disadvantages of traditional Web applications. RIAs are similar to Web applications but they also share the majority of the characteristics of desktop applications. These applications use a standardized Web browser to be run and via add-ons and through a virtual machine the additional characteristics are added. RIAs are applications that combine the advantages of both Web applications and traditional applications, and they seek to improve the user experience. Rich Internet Applications combine features and functionality of desktop applications, but they are delivered over the Web.

Commonly when the user clicks on a hyperlink, there is a constant refreshing of Web pages on traditional Web applications. This situation produces a high amount of traffic between the client and the server, resulting in the same web page being refreshed with a minimal change. By using RIAs, this process does not require a refresh process on each Web page, but the whole application is loaded from the beginning and it only produces a communication with the server when external data are required such as communication with databases or with some external files. RIAs have a particular way to handle and process information which is another difference. Today traditional desktop applications exclusively rely on client-side processing. When a task is initiated, the local system's resources are leveraged to process the request. In contrast, a Web application exclusively relies on the server-side technology to process a request. With the use of RIAs, the load is shared by both client-side and server-side technology. RIAs represent the next transition in the evolution of Web applications; they promise the richness, interactivity and usability lacking in many of today's web applications.

2. BASIC CONCEPTS

RIAs constitute a new paradigm on Web development, which are currently being released with great success in the world of IT (Information Technology) and business. The best way of understanding what RIAs are, is by placing them within the context of other related technologies such as ASP (Active Server

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