Chapter 7
Web 2.0: Self-Managing System Based on SOA Model and Grid Computing Overlay

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ABSTRACT
Web 2.0 is expected to be the next technology in the interaction between the enterprise applications and end users. Such interaction will be utilized in producing self-governance applications that are able to readjust and reconfigure the operation framework based on users’ feedback. To achieve this, huge numbers of underneath resources (infrastructures and services) are required. Therefore, this work proposes the merge of Web 2.0 technology and grid computing overlay to support Web 2.0 framework. Such merge between technologies is expected to offer mutual benefits for both communities. Through this work, a model for managing the interaction between the two technologies is developed based on the adapting of service oriented architecture (SOA) model, this model is known as SOAW2G. This model manages the interaction between the users at the top level and resources at the bottom layer. As a case study, managing health information based on users’ (doctors, medicine companies, and others) experiences is explored through this chapter.

1. INTRODUCTION
Web2.0 is considered as the next era of the interaction between the web applications and users, where Web2.0 offers the framework for community-based collaborative. The community can be varying based on the community patterns, behaviours and functions, i.e. health community, engineering community, software community, mobile community, application community, intelligent services community and others. Therefore, the Web2.0 framework is the merge of users’ experiences, feedback and services with the system resources (services and infrastructures), like wikis, blogs, RSS...etc. Therefore the interaction between the communities (users) at the top level with resources at the bottom level should be managed in a way that enhances performance, reliability, fidelity, and security of the
Web 2.0 framework. Such system requires dynamic model that has the ability to manage and re-manage or re-adjacent the underneath resources based on the experiences and feedback from the users in order to provide better services.

Web 2.0 successes in supporting different types of complex web applications (Web2.0 sites) (O’Reilly, 2005) that are available nowadays, such as Google Maps, YouTube.com, flicker, and many other irrefutable websites and web applications that are built up using the users’ participations themselves.

Despite the success that Web2.0 idea has achieved so far, most of the experts see that it can be pushed and developed further forward in the direction of creating large scale enterprise applications. This is achieved through the use of other smaller components and user contributions (SemanticGrid). Others are dreaming of the idea of creating customized application on the fly by utilizing the same concept. These ideas and ambitions are so alive now a days and are breaking their paths through to existence, but one of the main obstacles in creating such a thing is the need for large computational resources that are not easily available to everyone(O’Reilly, 2005; SemanticGrid).

To overcome the problem of resources lacking, the use of grid computing has been proposed in this work. In this chapter, grid computing offers the fabric for deploying different types of resources including applications and general services, infrastructures, monitoring and controlling systems and others. On the other hand, Web2.0 can be used to provide the Grid community with high quality and survivable services from the users’ contributions which generate self-manageable and self-governor framework that is able to re-shape the application and resources based on the interaction with environment.

In this work, we will try to answer the questions of “can the two concepts be combined to achieve a mutual assistance to each other in a crucial step toward the futuristic information technology world?”. Which leads to another question: “can Web2.0 and grid computing boost each other?”.

To answer these questions, a model for managing the interaction between the users at the top level and grid resources at the fabric layer based on the use of Services Oriented Architecture (SOA) model has been adopted and developed. The SOA has been adopted here to offer a platform for controlling the interaction between different layers of the system.

Principally, our approach for the merging process is to invoke and use grid computing resources through developed Web2.0 framework that have been already developed based on SOA philosophy (Wail M. Omar, May/ Jun, 2007) in a manner that would make this invocation seamless to users and other agents, so the semantic feature would be for all resources, infrastructures and services adequately. But does that means both technologies are strongly mixed together in this SOA based framework in a way that they will be one solid structure that cannot be dissolved into its basic two components? The answer is definitely no, because simply both technologies are still wobbling and yet in forming phases, to a different levels for both, and of course in different development paces for each one, so one of our main goals that we have focused on in this formation is the scalability of the framework and its two main components (Grid & Web2.0) and our vision about achieving that is to provide upper layers for both technologies that can hide the underneath complexities and structures, then we begin shaping our merging structure by working these high level layers.

This chapter is structures as follow: introduction is described in section 1. Then, the background is discussed in section 2, followed by SOAW2G model in section 3. How to use the model in action is explained in section 4. Then, describing for the Resources Markup Language (RML), classifying resources at the bottom layer with a case study of classifying drug information is coming in section 6 with case study on classifying the health...