Trends in Practical Applications of Agents and Multiagent Systems

PAAMS, the International Conference on Practical Applications of Agents and Multiagent Systems, is an international forum for present, to discuss, and to disseminate the latest developments and the most important future-related trends in the field of multiagent systems. It provides a unique opportunity to bring multi-disciplinary experts, academics and practitioners together to exchange their experience in the development of Agents and Multiagent Systems.

This volume presents the papers that have been accepted for the 2010 edition in the Special Sections and Workshops. PAAMS 2010 special Sections and Workshops form a very useful tool in order to complement the regular program with new, emerging topics of particular interest to the participating community. Special Sections and Workshops that emphasize on multi-disciplinary and transversal aspects, as well as cutting-edge topics were especially encouraged and welcomed.
Abstract. Time is an important Quality of Service (QoS) parameter in services. In many situations, the response provided by a service could be completely useless if it is not provided on time. In this paper the infrastructures to provide a real-time web service (RTWS) are described. These RTWS are provided by agents with the capability of negotiating and guaranteeing the service execution time. These kind of agents control the service execution time and allow a provider-client negotiation process in order to arrive at an agreement on when the service response is to be provided. If an agreement is reached, these agents also guarantee that the agreement is going to be fulfilled. Usually, aims to validate RTWS and the behavior of provider agents are presented.

1 Introduction

Nowadays, service-oriented computing (SOC) brings additional considerations, such as the necessity of modeling autonomous and heterogeneous components in interactive and dynamic environments. Such components must be autonomously reactive and proactive yet able to interact flexibly with other components and environments. As a result, they are best thought of as agents who collectively form Multi-Agent Systems (MAS). SOC represents an emerging class of approaches with Multi-Agent System-like characteristics for developing systems in large-scale open environments. For this reason, agent orientation is considered an appropriate design paradigm to act as a provider of services. Agents due to their characteristics can offer more flexibility in interactions between services and clients. Furthermore, agents through negotiation or agreement processes can provide more suitable services according to quality of service (QoS) client requirements.

Table 1 Results with capacity of negotiation in the SPA.

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<thead>
<tr>
<th></th>
<th>Web</th>
<th>Without</th>
<th>Gas</th>
<th>Without</th>
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<tr>
<td></td>
<td>W.</td>
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<tr>
<td>No. of total requests</td>
<td>10.56</td>
<td>0.60</td>
<td>115.12</td>
<td>0.34</td>
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<tr>
<td>TPS</td>
<td>0.395</td>
<td>0.108</td>
<td>75.72</td>
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4 Conclusions and Future Work

In this paper, an architecture which offers real-time web services through provider agents (SPA) that follow an agreement protocol is presented. The SPA controls the execution of the real-time web services, analyzes a request can be provided by a service before a deadline and also schedules the service execution in order to guarantee the resources needed for the service. This architecture is executed over a real-time operating system which provides mechanisms that guarantee deadlines. In order to validate the behavior of the architecture, several tests have been done. The tests show that the use of a SPA improves the quality of the exchanged services through a negotiation process with the clients and increases CPU utilization.

An extension of this architecture is planned in order to offer a logic negotiation time for agreements and also to offer time-bounded service compositions. Furthermore, to avoid a bottleneck in the SPA, there is a proposal to replace, if necessary, the SPA and distribute the workload.

References