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# Service Discovery and Composition in Multiagent Systems

Elena del Val Noguera<sup>1</sup> and Miguel Robollo Pedruelo<sup>2</sup>

Department of Information Systems and Computation  
Technical University of Valencia  
Camino de Vera s/n. 46022 Valencia (Spain)

**Abstract.** This paper reviews the existing techniques used in the discovering and composing of services. The task of selecting an adequate service can quickly grow tedious if all services that are listed under a certain description have to be compared manually for the final selection. And what is more, the final selection does not only depend on service parameters like executions costs or accuracy, but depends on the usefulness of objects or information that service offers. This problem is present in open environments where entities like web services or agents need to locate other entities to achieve cooperation, delegation or interoperation. For these reason these two approaches, web services an agents have deal with these problem proposing an automated and efficient mechanism to determine a structural and semantic match descriptions between entities.

## 1 Introduction

The growth in the number of services in Internet provides a great amount of opportunities for companies. Concretely, there is a great potential in the creation of value added to these services through mechanisms that facilitate interoperation, cooperation, delegation of tasks or location of resources. For all of them, it is necessary, first, to locate the entities which provide the requested service with efficiency. This problem appears in two different technologies—agents and web services— which share some points in common.

Web services promote the interaction between applications. Services are a software components that can process a document XML that receives through combinations of application and transport protocols. More and more, organizations are adopting standard protocols and nowadays web services are based on XML languages, such as SOAP, WSDL and UDDI. Thanks to these standards and the possibility of reusability and composition of web services, web services are emerging as the new fundamental elements for the development of complex software applications. Nevertheless, one of the requirements for the reusability and composition of services it is the ability to find the correct service or set of services that fulfills user's requirements.

In the area of multi-agent systems, the need for locating agents with specific capabilities becomes more important. In open systems, agents can dynamically appear and disappear. Hence the agents do not know always the names and

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