

Towards automated service procurement.

A Framework for Automated Service Trading

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In the last years, service-oriented architecture (SOA) has become a mature paradigm in software industry. Amongst other trends, SOA provides a new approach to procurement of services between multiple organizations. In this context, it is possible to outline a high level of automation in the searching and integration of services in a cross-organizational scenario. In fact, the next big step in this direction shall be to achieve an automatic procurement of services that will allow the customer to choose the best provider according to its business rules at run time. On the other hand, integration scenarios are being the key place where SOA is being applied; in this context, we believe that automated procurement can also be promising field that would drive a better rationalisation of resources of the integrated organisation.

However, in order to achieve the automated procurement of services, there is an important gap to be solved: the automatic creation of agreements that specify the the rights and obligations of each party in the service consumption (i.e. both service provider and consumer). Specifically, there is a need of an automated handling of the agreement process. This covers two main issues namely: (i) The first issue is to have a machine processable way to express the agreement. In our context, these agreements would consist of a set of terms that the parties that sign the agreement are supposed to obey. These terms can be referred to both functional and non-functional requirements. (ii) The second issue is the definition of the agreement process itself. Two different phases have been identified on it. On the one hand, the agreement creation phase, which can include a negotiation process, in which both customer and provider try to get an agreement that maximises their benefits based on their business information. On the other hand, we find the phase where a track of the service consumption is developed in order to check the agreement fulfilment.

Our dissertation would be centred on the agreement creation phase that can be decomposed in what we call the trading process that formalise the stages needed for an automated creation of agreements. Some infrastructures currently support a partial process but, to the best of our knowledge none of them deal with the complete trading process.

In this context, our aims are fourfold. First, to give support for multiple customers and providers interactions, where a customer should choose which is the provider that fits better with its needs and vice versa. Second, to propose a flexible framework that allows different decision-making algorithms to drive the whole trading processes of creating agreements. Third, to create an architecture aligned with industrial standards in order to allow an easier integration with other architectures and alternative solutions. Finally, we would like to outline and unveil a new business role in the dynamic outsourcing scenario: the web service trader. Furthermore, our proposal should allow the creation of a network of domain-specialized traders in which service customers and providers delegate to create optimal agreements taking into account their business demands in terms of Functional Requirements, Non-Functional Requirements, Utility Functions and Negotiation clauses.