

Dynamic Selection of Redundant Web Services



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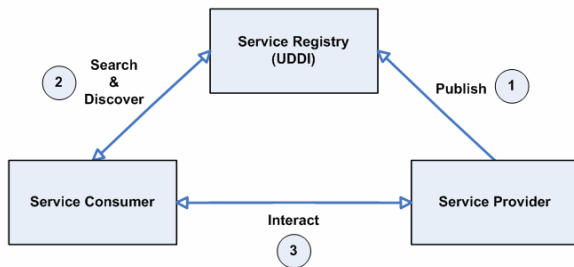
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Introduction

- Web Services evolve from the Service-Oriented Architecture paradigm;
- Web Services are loosely-coupled, distributed components;
- Web Services are platform- and programming language independent;
- Web Services are described by Web Service Definition Language (WSDL) in XML format;
- Web Services message exchange is based on Simple Object Access Protocol (SOAP).
- Web Services Conceptual Model:

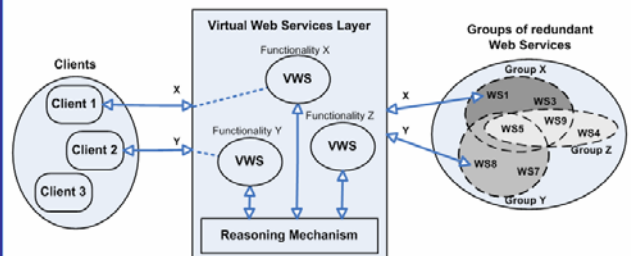


Related Work

- Issues:
 - Do the other researchers focus on dynamic service selection? – Yes.
 - Is the service selection transparent to the clients? – No. Usually, the clients are involved in the service selection.
 - How is the service selection realized? – QoS computation and ranking; Expert systems and service evaluation functions; Agents/Mobile agents; Virtualization of services and monitoring.
- What is missing? – A flexible architecture that provides transparent and dynamic selection of redundant Web Services.

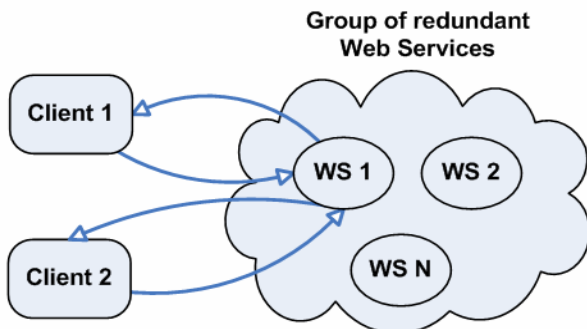
Proposed Approach

- Virtual Web Services Layer (VWSL):



Problem Definition

- By nature, the domain of Web Services consists of redundant services:



- How to manage redundant Web Services on the server side in order to achieve:
 - Transparent selection;
 - Dynamic selection.
- What selection techniques should be applied?

- Characteristics of the Virtual Web Services Layer:

- Dynamic service selection and invocation;
- Transparent service selection and invocation;
- Flexibility:
 - New functionality can be added to the system at run-time;
 - Different selection strategies can be applied.

Evaluation

- Phase 1: VWSL prototype – feasibility check for managing redundant Web Services in a dynamic and transparent manner;
- Phase 2: Observing response times of Web Services in different environments – the results are used in phase 3;
- Phase 3: VWSL simulation – observing which selection techniques should be applied depending on the information available to the system regarding the QoS of the Web Services.