A Dynamic and Semantic Service Lookup Framework for Metacomputing

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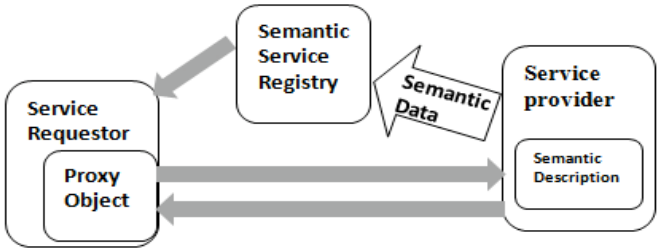
Description

Problem Statement

- In SORCER/Jini service types and attributes describe services, but there is no mechanism to lookup these services based on relevant semantics.
- There is only exact matching of service types and attribute values in a lookup query with those in a registration only.
- It is necessary to have more complex attributes to capture richer semantics.
- There is no standard approach as how to lookup services with provided service semantics.



Conclusion

- Thus approximate matching is required for service descriptions with arbitrary complex attributes and a set of meaningful comparison operations based on the semantics of those attributes.

Objective/Approach

Objective

A Dynamic and Semantic Service Lookup framework for metacomputing (DSSL) defining semantics of service descriptions, queries, and how queries and descriptions are matched

Approach

- Review literature on Semantic Overlay Networks (SON), Semantic Web concepts and other related research
- Define requirements for semantics of service descriptions, queries, and matching queries to service descriptions
- Design classification hierarchy for semantically grouped services, a SON classifier, semantic cataloger for service registration, and service accessor for semantic service lookup
- Implement DSSL in SORCER
- Deploy the DSSL framework in SORCER
- Validate the DSSL framework

Schedule

1.	Literature review	01/20/2009
2.	Requirements definition	01/31/2009
3.	DSSL framework design	02/10/2009
4.	Implementation of service description (ontology) and semantic classifier	02/28/2009
5.	Semantic service cataloger	03/16/2009
6.	Semantic service accessor	03/25/2009
7.	Integration of DSSL services: classifier, cataloger, accessor	04/10/2009
8.	DSSL deployment	04/21/2009
9.	DSSL verification and validation	04/30/2009
10.	Thesis defense	05/11/2009

Benefits

- Faster service discovery based on SON
- Higher expressive power of the queries, due to approximate matching
- Richer service descriptions based on semantics
- Increased interoperability and integration due to standardized service interfaces for handling service metadata
- Faster service lookup as only semantically related clusters are queried
- A user friendly and zero-install GUI attached to service providers for editing their semantic descriptions
- User friendly and zero-install admin GUI attached to classifier provider to monitor SON