



An Autonomic Service Discovery Mechanism to Support Pervasive Device Accessing Semantic Grid

*Tao Guan
School of ECS
University of Southampton*

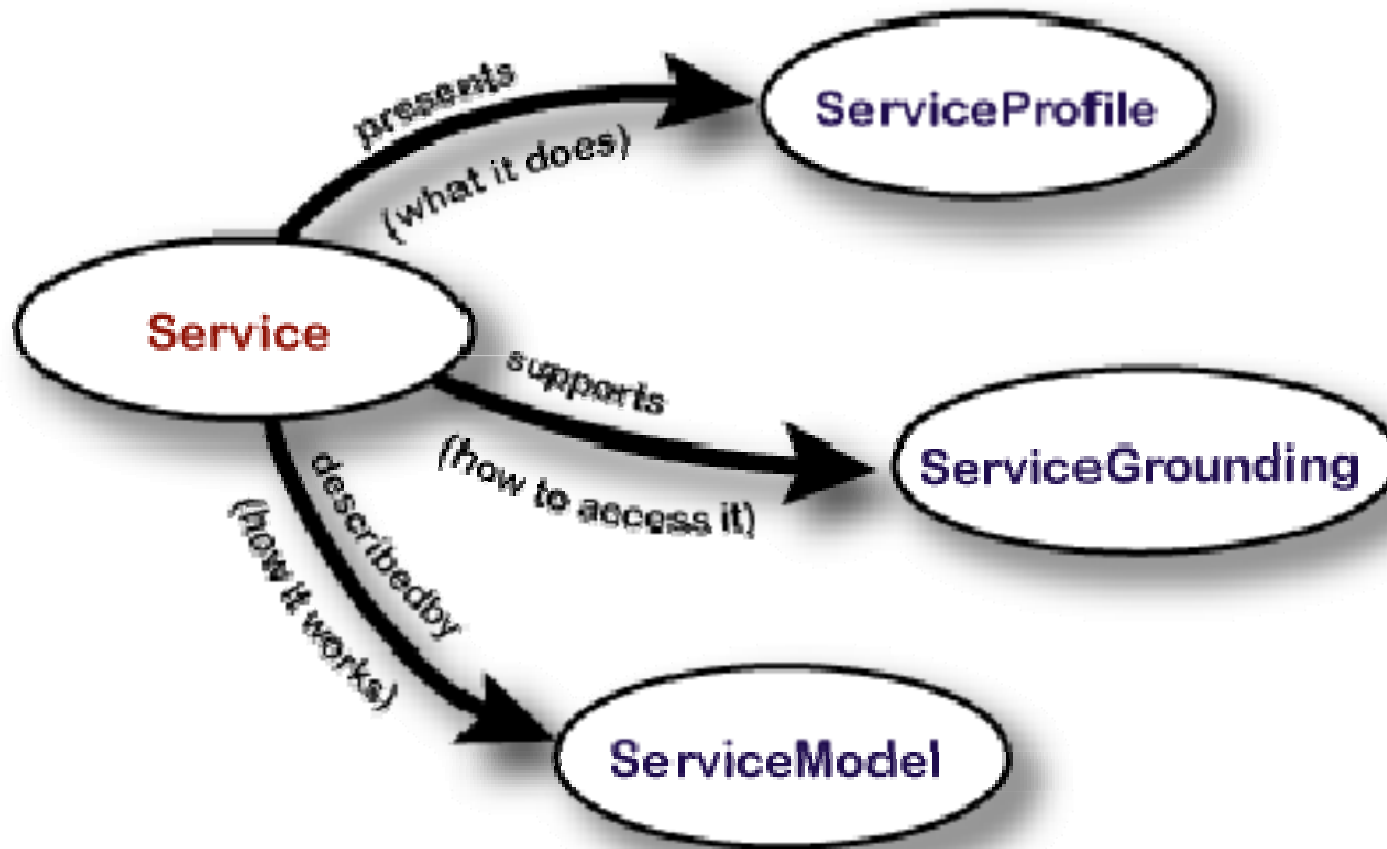
Research Background

- **We are doing a project of integrating pervasive devices into Grid environments**
- **An challenge: how a pervasive device locate, find, select and invoke an appropriate Grid services in a resource (service)-rich environment?**
- **Bring semantic web technologies to Grid services to build a dynamic Grid service discovery mechanism**

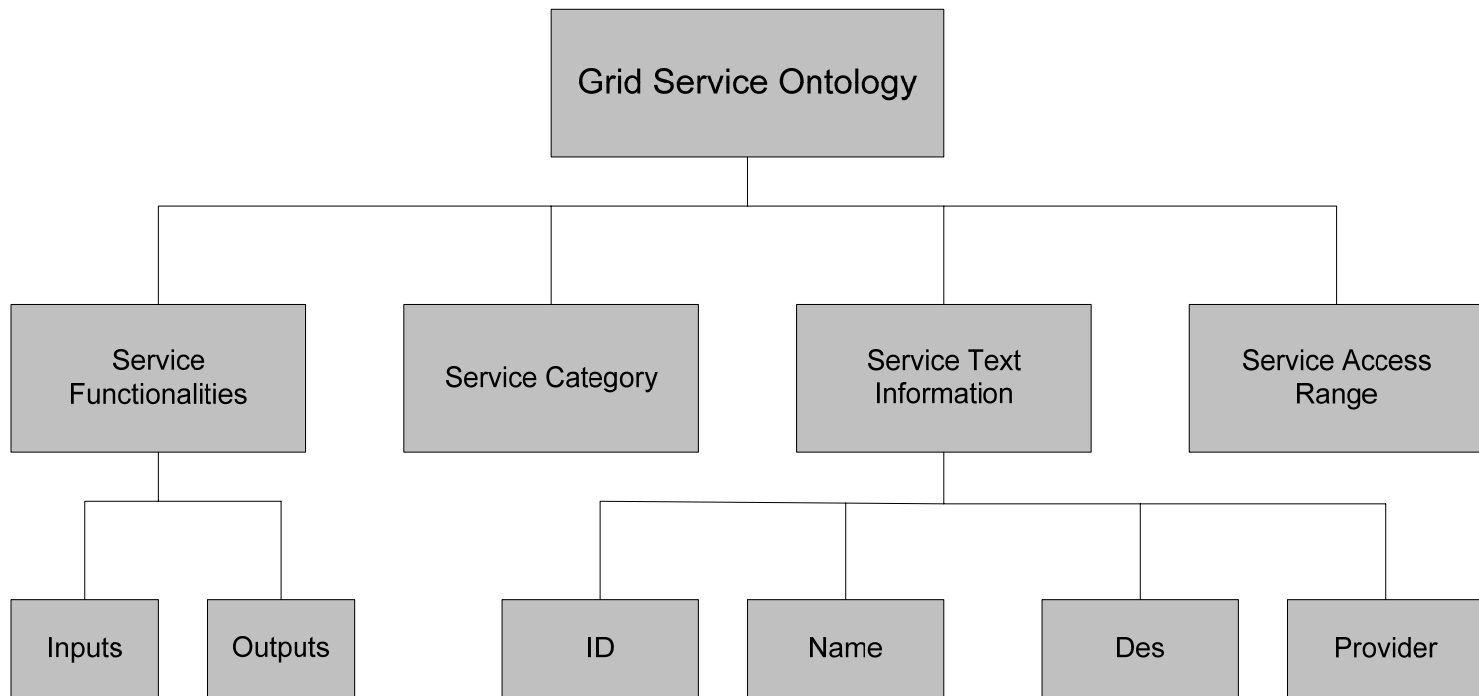
Semantic Web Technology

- **Semantic web is a universal medium for the exchange of data, a facility to put machine-understandable data on the web, and a place where data can be shared and processed by automated tools as well as people.**
- **Semantic Web develops a set of languages, e.g. RDF and OWL, to address the problem of XML lack of semantics.**
- **OWL-S is an ontology, providing a standard vocabulary to create service description to support automatic service selection and service composition.**

OWL-S Upper Level Ontology



Grid Service Description



OWL-S class diagram for Grid service description ontology

Grid Service Discovery

Two essential points:

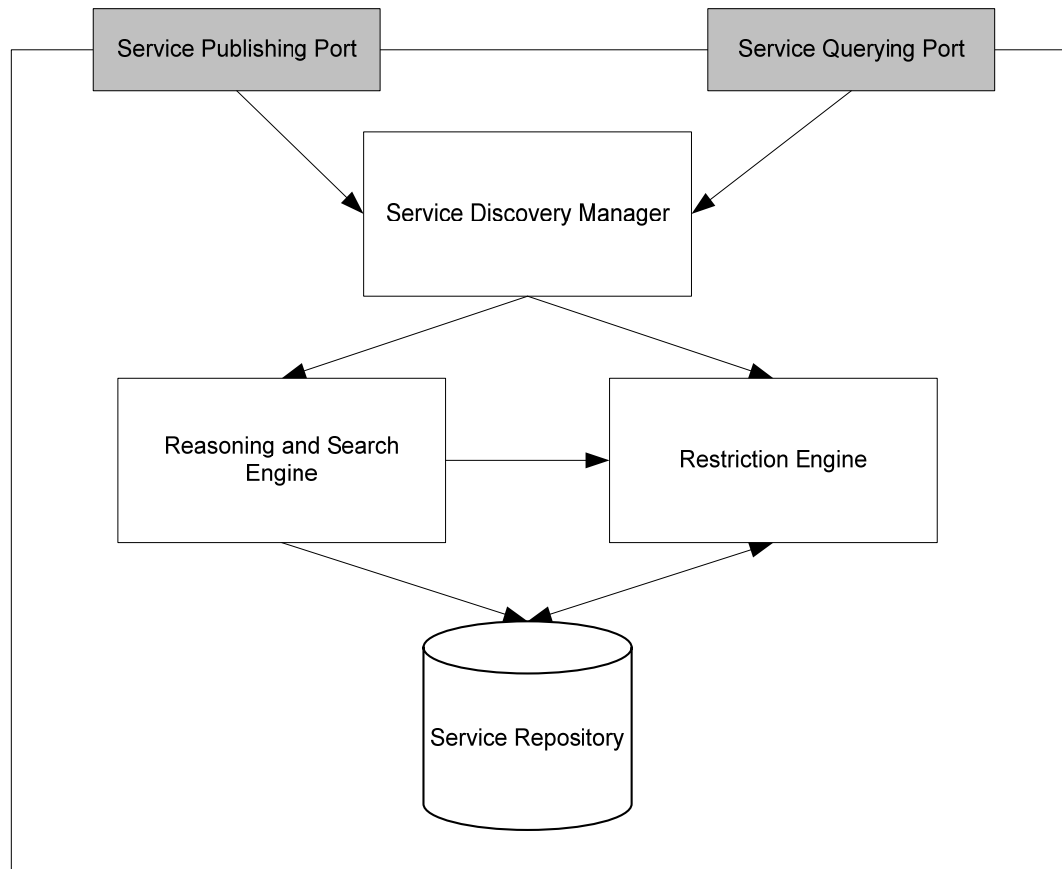
- **Separation between Grid service implementation and description**
- **Users describe service request with terms from the same semantic model used to build Grid service description**

Grid Service Discovery

Two schemes are considered in our Grid service discovery mechanism:

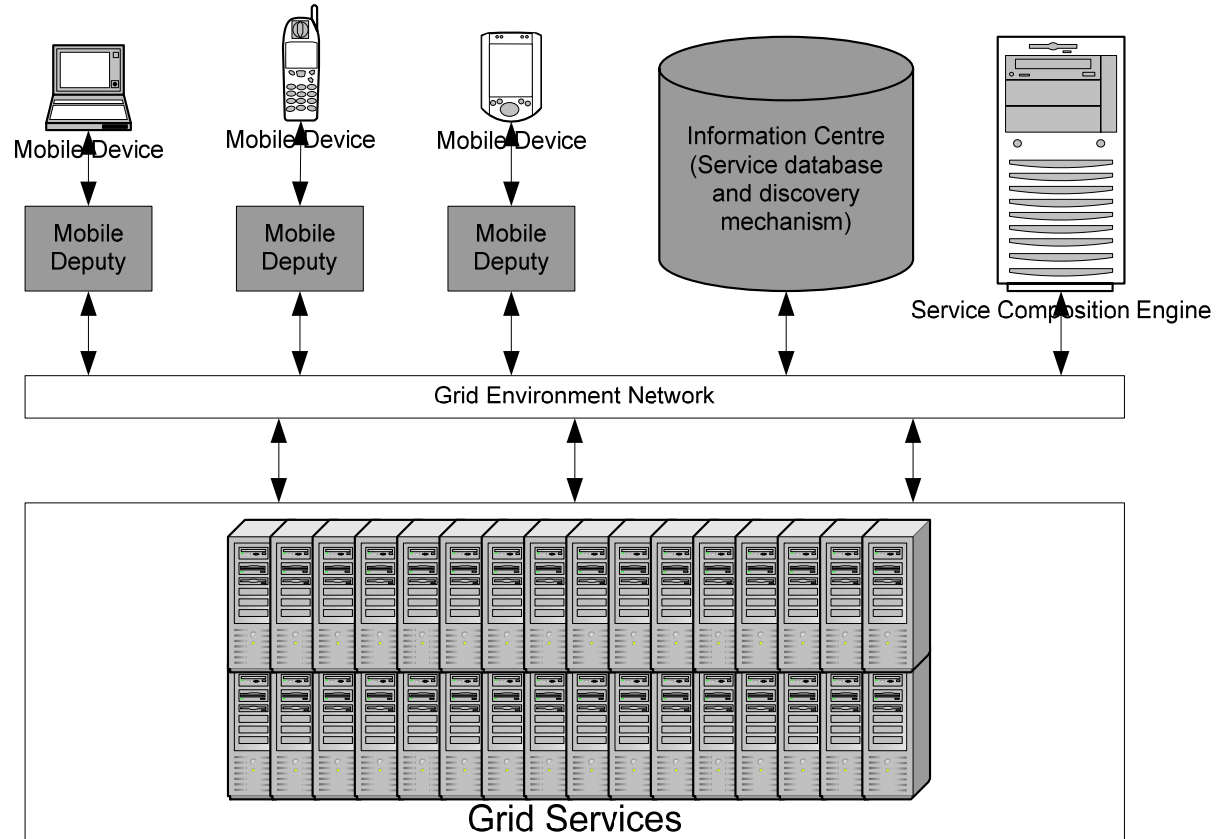
- **Traditional “Discover + Match” Scheme**
- **Dynamic Service Composition Scheme**

Architecture



Architecture of Grid Service Discovery Engine

Implementation and Evaluation



System Framework

Thank You!