A Reasoning Broker Framework for OWL

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Different requirements of semantic applications
- Ontologies (size, expressivity)
- Reasoning tasks
- Stream / sequence of queries
- Concurrent reasoning requests
- …

Reasoning systems for OWL
- Pellet, FaCT++, RacerPro, KAON2, Hermit, CEL, …, Screech, AQA
- Different strengths and weaknesses
- Different language expressivity

How to match these requirements effectively and efficiently using existing reasoners?
Reasoning Brokerage

Semantic Application

- OWL API

HERAKLES

[localhost]

Configuration

Monitoring

Extension Points

- Tabs and Views

External Remote Reasoners

- AQA [server1.com]
- Pellet [server2.com]
- FaCT++ [server3.com]
- KAON2 [server4.com]
- Screech [server5.com]...
Quick answering of a sequence of queries on a stable ontology.

In this experiment:
- Wine ontology
- 100 random queries
- 3 Reasoners
  - Pellet
  - FaCT++
  - KAON2
  - *All*
- Simple (fault tolerant) parallelisation strategy

Runtime comparison of reasoners in the reasoning broker framework
HERAKLES reasoning broker framework for OWL
Controlled delegation of reasoning requests to various external remote reasoners
Behaviour controlled by broker strategies
• Parallelisation
• Selection
• Partitioning (planned)
• Anytime reasoning (currently by approximation)
Protégé plug-in
Integration
• OWL API
• OWLlink (planned)

http://herakles.sourceforge.net
Thanks for your attention!