2008
OWL-S and SAWSDL Service Matchmakers

Matthias Klusch (DFKI, Germany)
Alain Leger (France Telecom Research, France)
David Martin (SRI International, USA)
Massimo Paolucci (NTT DoCoMo Research Europe, Germany)
Abraham Bernstein (University of Zurich, Switzerland)
Terry Payne (U Southampton, UK)

Organisational Issues

- **Open call for entries**
  - Via SMR2 workshop CFPs and workshop Web site
  - Via S3 Web site: http://wwwdfki.de/~klusch/s3/
- **Evaluated Entries**
  - OWL-S
    - **OWLS-iMatcher2** (U Zurich, CH) – *hybrid*
    - **OWLS-MX 2.0** (DFKI, D) – *hybrid*
    - **JIAC-OWLSM** (TU Berlin/DAI Lab, D) – *hybrid*
  - SAWSDL
    - **URBE** (Politecnico di Milano, I) – *non-logic-based*
    - **SAWSDL-MX** (DFKI, D) – *hybrid*
- **Testing environment**
  - Evaluation environment SME2 release 2.0
  - OWLS-TC 2.2 (1007s,29q,34o), SAWSDL-TC 1.0 (894s, 26q, 24o)

OWL-S Matchmakers: Summaries

- **OWLS-iMatcher2**
  - Dev: C. Kiefer & A. Bernstein (U Zurich, CH)
  - *Logic-based*: Logical unfolding of service I/O concepts (Pellet)
  - *Non-logic-based*: Text similarity-based matching of unfolded service signatures and names (SimPack: Edit - Levenshtein, Monge-Elka, Jaro; Token - Cosine, Jaccard, Dice etc.; over built index, no matchmaker ontology)
  - Ranking is text similarity-based
- **OWLS-MX 2.0**
  - Dev: M. Klusch, B. Fries, P. Kapahnke (DFKI, D)
  - *Logic-based*: Logical unfolding of service I/O concepts (Pellet); Logic-based matching (exact, plug-in, subsumes, subsumed-by - over matchmaker ontology)
  - *Non-logic-based:* Integrated text similarity measurement of unfolded I/O concepts (Cosine, Jaccard, LOI – over additional I/O concept index)
  - Ranking is logic-based sorted by text similarities

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OWL-S Matchmakers: Summaries (2)

- **JIAC-OWLSM**
  - Dev: Nils Masuch (TU Berlin – DAI Lab, D)
  - *Logic-based*
    - subsumption relations between service and query I/O concepts
    - mapping of logical matching degrees lmatch(R,S) to numeric scores
  - *Non-logic-based*
    - integrate simple text similarity between concept names (Java string.equal(): exact string match, string.contains(): exact substring match)
    - weighted sum of logic-based and text similarity based matching scores
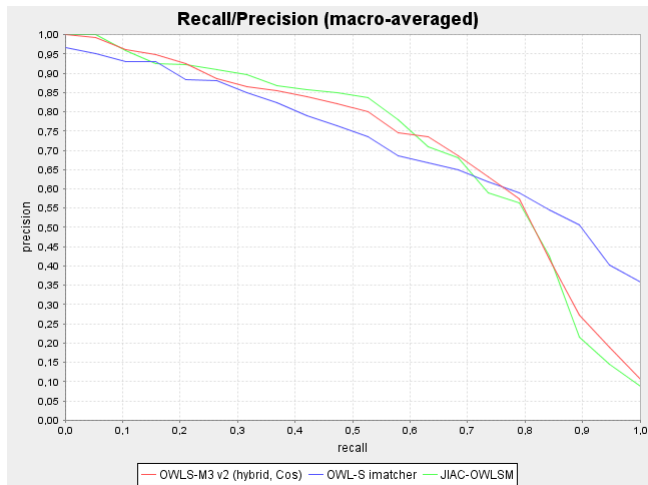
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Performance Evaluation: R/P and Runtime

OWL-S Matchmakers

Total runtime:

- owls-imatcher: 11,2 min

- owls-mx: 14,4 min

- **jiac-owlsm: 3,9 min**

- Service registrations
  w/ matchmaker ontology/index
  building
- Service matching & ranking
  (selection)

Recall/Precision (macro-averaged)

Legend: OWLS-M3 v2 (hybrid, Cos) — OWL-S imatcher — JIAC-OWLSM

Source: Klusch

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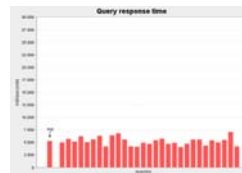## Performance Evaluation: AQRT

OWL-S Matchmakers

Avg query response time:

- owls-imatcher: 22,94 secs
- **owls-mx: 5,26 secs**
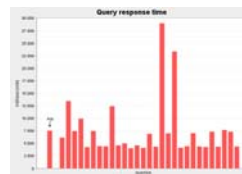- jiac-owlsm: 7,54 secs

owls-imatcher

owls-mx

jiac-owlsm

Source: Klusch

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SAWSDL Matchmakers: Summaries

- **URBE**
  - Dev: Pierluigi Plebani (Politecnico di Milano, I)
  - *Non-logic-based*
    - Bipartite graph-matching of service operations
    - Ontology-based operation I/O concept similarity (worst-case path length in given reference ontology); Text similarity (WordNet-based) for property-class and XSD data type matching
- **SAWSDL-MX**
  - Dev: Patrick Kapahnke, Matthias Klusch (DFKI, D)
  - *Non-logic-based*
    - Bipartite graph-matching of service operations
    - *See OWLS-MX*
  - *Logic-based*
    - *See OWLS-MX*

Source: Klusch

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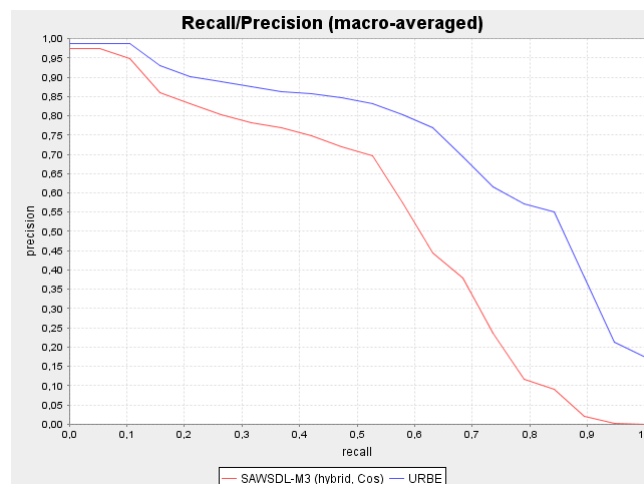## Performance Evaluation: R/P and Runtime

SAWSDL Matchmakers

Total runtime:
- sawsdl-mx: 8,1 min
- urbe: 20,0 min

For SAWSDL-TC 1.0

Recall/Precision (macro-averaged)

SAWSDL-M3 (hybrid, Cos) — URBE

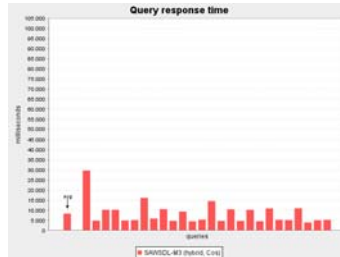Source: Klusch

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Performance Evaluation: AQRT

SAWSDL Matchmakers

Average query response time:

- sawsdl-mx: 8,38 secs
- urbe: 45,89 secs

sawsdl-mx

urbe

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