RDF Stream Processing Workshop

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Why Streams?

Internet of Things
Sensor Networks
Mobile Networks
Smart Devices
Participatory Sensing
Transportation

Financial Data
Social Media
Urban Planning
Health Monitoring
Marketing

“It’s a streaming world!” [1]

Why Streams?

**Go Web**
- Web standards
- Data discovery
- Data sharing
- Web queries

**Integration**
- Semantics
- Vocabularies
- Data Harvesting
- Data linking
- Matching

**Processing**
- Query languages
- Query answering
- Efficient processing
- Query Federation

**Reasoning**
- Ontologies
- Expressivity
- Inference
- Rule processing
- Knowledge bases

Work in progress
The RSP Community

Many topics
- RDF Streams
- Stream Reasoning
- Complex Event Processing
- Stream Query Processing
- Stream Compression
- Semantic Sensor Web

Tons of work
- Research work
- Many Papers
- PhD Thesis
- Datasets
- Prototypes
- Benchmarks

W3C RSP Community Group
http://www.w3.org/community/rsp

effort to discuss standardize combine formalize evangelize

our work on RDF stream processing
The RSP Community
Some of the Work done...

- Use cases / requirements
- Existing approaches
- RSP Data model
- RSP query language
- RSP Serialization
- System Implementations
RSP Workshop: Contributions

• P3: From Semantic Complex Event Processing to Ubiquitous Pragmatic Web 4.0.  
  A. Paschke and K. Teymourian

• P4: CoDeR Model for Continuous Reasoning over OWL 2 RL Ontologies.  
  D. Monks

• P5: On the Road to the Evaluation of RDF Stream Compression Techniques.  

  H. Beck, M. Dao-Tran and T. Eiter

• P7: Scalability in RDF Stream Processing Systems.  
  A. Llaves and O. Corcho

• P8: On the need for adaptivity in RDF Stream Processing.  
  Z. Shamszaman, M. Intizar Ali and A. Mileo

  D. Le Phuoc, M. Dao-Tran, C. Le Van, LT Anh, MN Duc, T. Tran Nhat and M. Hauswirth
RSP Workshop: Contributions

• P11: The Aspern Smart City Project.
  J. Xavier Parreira

• P12: Sharing and Reusing Continuous Queries – Expression of Interest.
  R. Keskisärkkä and E. Blomqvist

• P13: Incremental Rule-based Reasoning over RDF Streams: An Expression of Interest.
  R. Albeladi, K. Martinez and N. Gibbins

• P15: Towards Unified Semantics for RDF Stream Query Processing.
  D. Dell’Aglio, JP Calbimonte, E. Della Valle and O. Corcho

• P16: On Combining RDF Streams and Remotely Stored Background Data.
  S. Dehghanzadeh, D. Dell’Aglio, S. Gao, E. Della Valle, A. Mileo and A. Bernstein

• P14: Demo: YABench – Yet Another RDF Stream Processing Benchmark.
  M. Kolchin and P. Wetz

• P9: RDF Stream Processing for Smart City Applications.
  F. Gao, M. Ali and A. Mileo
RSP Workshop: Contributions

- **Vision**
  - P3: Semantic Complex Event Processing
  - P5: Evaluation RDF stream Compression
    - P14 (Demo): YABench
  - P4: CoDeR
  - P13: Incremental Rule-based reasoning

- **Evaluation**
  - P10: Platform-agnostic execution
  - P7: Scalability
  - P8: Adaptivity in RDF Stream Processing
  - P16: Combining RDF Streams and Remote background data

- **Reasoning**
  - P11: Aspern Project
  - P9 (Demo): RDF Stream Processing for Smart City

- **Platforms**

- **Query Language**
  - P15: Unified Semantics
  - P6: Semantics and complexity
  - P12: Query reuse
RSP Workshop

- 9:00–9:15 Opening
- 9:15–10:30 EoI: 8+2 min presentations
  - Query Language: P6, P12, P15
  - Reasoning: P4, P13
  - Smart Cities: P11
- 10:30–11:00 Coffee
- 11:00–12:00 EoI: 8+2 min presentations
  - Platforms: P10, P7, P8, P16
  - Evaluation: P5
- 12:00–12:30 Demo Session
  - P9: RDF Stream Processing for Smart City
  - P14: YABench
- 12:30–14:00 Lunch
RSP Workshop

- 14:00–14:30 Keynote by Adrian Paschke
- 14:30–15:30 Breakout groups, potential topics:
  - Query language and semantics
  - Serialisation/On the wire protocol
  - CEP layer on top of query language
  - Benchmarking/evaluation
- 15:30–15:45 Coffee
- 15:45–16:45 Break out groups continue
- 16:45–17:30 Report back
- Social meal in the evening