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PRELIMINARY CALL FOR PAPERS  
Journal of Web Semantics

Special Issue on Semantic Web Dynamics

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**Description**

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Recent years have witnessed the arrival of more and more semantically annotated data and related ontologies in the Semantic Web. For example, the linked data initiative has been very successful in making datasets available online, with a total of about 5 billion triples all together so far. While existing semantic tools and reasoning engines are year after year getting better in dealing with time invariant domain of ontological knowledge, supporting rapidly changing information has not yet attracted sufficient attention.

There are more and more heterogeneous and/or dynamic data types being created and which integration could lead to interesting applications and models (e.g. sensor data streams, geospatial information and imagery, financial transactions, news feeds, 3D models, engineering data, information for policy intelligence etc.). Current Stream Database Management Systems provide on the fly analysis of data streams, but they suffer several limitations: they cannot handle heterogeneous data streams originating from a variety of already deployed sensors; they cannot combine data streams with slowly evolving knowledge at query time; and they cannot perform reasoning tasks. And in the area of reasoning, while the problem of classical, time invariant domain of ontological knowledge has been extensively studied, the task of reasoning with rapidly changing information has been mostly neglected and constitutes a new challenge.

Furthermore, ontologies, just like any structure holding knowledge and information, need to be updated too: changes could be initiated because of a change in the world being modeled; or by a change in the users' needs which would require a different conceptualization; or by the acquisition of knowledge previously unknown, unclassified or otherwise unavailable; or by the noticing of a design flaw in the original conceptualization. In all these cases, the representation of knowledge in the ontology should be modified so as to form a more accurate or adequate conceptualization of the domain.

This general issue of Semantic Web Dynamics includes difficulties from both practical and theoretical points of view, raising a variety of research questions and development challenges, such as how to support the ontology and data publishers in maintaining up-to-date, adequate representations; how to detect the need for evolution and changes; how to facilitate the integration of new, dynamic sources in existing datasets and ontologies; how to validate and evaluate the impact of the changes on semantic

information; how to handle changes triggered from multiple sources and collaborative updates; and how to keep track of (possibly concurrent) versions of and ensure the delivery of up-to-date and valid knowledge.

### **Topics of Interest**

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For this special issue, we seek articles describing foundational and theoretical work as well as technological solutions to these challenges.

More specifically, we expect submission on (but not restricted to) the following topics:

- Foundational and formal aspects of Semantic Web dynamics
- Language extensions for Semantic Web dynamics
- Reasoning with dynamic data and ontologies
- Engineering dynamic data and ontologies
- Requirements and practical issues for Semantic Web dynamics
- Applications of dynamic data and ontologies
- Theory for stream reasoning
- Logic language for stream reasoning
- Scalability issues in stream reasoning
- Ontologies for dynamic environments
- Dynamic knowledge building, and (re-)use
- Ontology evolution and versioning
- Language extensions for evolution
- Belief revision for ontologies
- Change propagation in ontologies dynamic datasets and ontologies
- Inconsistency in evolving semantic information
- Incremental reasoning
- Case studies and applications of ontology and knowledge evolution
- Tools to support dynamic data and ontologies

### **Important Dates**

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31 May 2010: Submission deadline

31 August 2010: First-round reviews complete

31 October 2010: Revised papers submitted

23 December 2010: Final acceptance decisions

### **Method of Submission**

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Only electronic submissions will be considered. The precise method will be announced later. Any question can be addressed to the guest editors.

### **Guest Editors**

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Grigoris Antoniou (FORTH, Greece)

Mathieu d'Aquin (The Open University, United Kingdom)

Jeff Z. Pan (University of Aberdeen, United Kingdom)