# Call for Proposals/Papers for SIGMOD Record Special Issue on
# **Semantic Interoperability in Global Information Systems**

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Interoperability amongst interacting heterogeneous information sources continues to pose enormous challenges to the database, AI and other communities. Access to relevant and accurate information is becoming increasingly complex in an environment characterized by large distributed, diverse, and dynamic information sources. Underscoring this complexity is the evolving system, semantic and structural heterogeneity of these potentially global, cross-disciplinary, multicultural and rich-media technologies. While significant progress has been achieved in system, syntactic, and structural/schematic interoperability, comprehensive solutions to semantic interoperability remain elusive. Yet, several trends and advances in software technologies are continuing to bring focus to semantic issues. These include:

- ease of accessing and publishing a broad variety of data and data sources, with the corresponding challenge in heterogeneity and information overload from using simpler (such as keyword based) access techniques
- progress in techniques to model, capture, represent and reason about semantics; graduate progress in attention from data to information, and increasingly knowledge
- challenges in dealing with non-traditional (esp. visual) data that cannot be easily handled with well known IR and traditional database techniques
- increasing attention to the issue of interoperability in various domains and research areas (e.g., bibliographic data, digital libraries, geographic and environmental data, space and astronomy data, etc.) and the improved technological ability to develop more challenging applications (e.g., digital earth, digital human) involving wider variety of users and perspectives over shared information resources
- dynamic and flexible business environment, supported by the evolving concepts of virtual organizations and adhocracies-- and concomitant requirement for flexible semantic interoperability to interpret the available information in light of new market contingencies and the variety of intra- and cross-disciplinary forms of collaboration scientific or otherwise.

Given a possibly broad interpretation of what is semantics, we would like to focus on real-world semantics rather than semantics of formal representations or systems (e.g., semantics associated with a first order logic or formal axiom system). That is, semantics related to mapping of objects in the model or computational world onto the real world, or the issues that involve human interpretation, or meaning and use of data or information, are of more interest. Items of specific interest include:

- use of domain specific metadata, domain specific ontologies and context to achieve semantic interoperability
- semantics of visual, scientific and engineering data
- fundamental issues in representation and reasoning about real world semantics to achieve semantic reconciliation, identify relationships or measure semantic proximity
- semantic reconciliation amongst structured, semi-structured and multimedia information sources; semantic reconciliation to resolve spatial and temporal conflicts
- theories for supporting dynamic integration of autonomous and heterogeneous information sources with possibly evolving and incompatible internal semantics; semantic negotiation and reconciliation tools in environments characterized by incomplete and uncertain information
- semantic protocols to support intelligent and query-directed integration of information where semantics are viewed as a matter of continuous negotiation and evolution; coordination and search mechanisms to support semantic reconciliation
- semantic interoperability challenges in specific domain (such as those mentioned above or the collaborative domains such as digital earth, etc.)

**Schedule**:

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| October 1: | 1 to 2 page proposals due to both editors by email |
| October 15: | invitation to send short submissions (5 to 8 pages) |
| November 22: | submissions by the authors |
| December 15: | comments to the authors of accepted submissions |
| January 7: | final camera ready copy due |
| March: | publication in SIGMOD Record |

A likely follow on to the special issue is an edited book on the topic of the special issue.


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