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Towards a scalable, pragmatic knowledge representation language for the web.

Pnueli, Amir (ed.) et al., Perspectives of systems informatics. 7th international Andrei Ershov memorial conference, PSI 2009, Novosibirsk, Russia, June 15–19, 2009. Revised papers. Berlin: Springer (ISBN 978-3-642-11485-4/pbk). Lecture Notes in Computer Science 5947, 124-134 (2010).

Summary: A basic cornerstone of the Semantic Web are formal languages for describing resources in a clear and unambiguous way. Logical underpinnings facilitate automated reasoning about distributed knowledge on the Web and thus make it possible to derive only implicitly available information. Much research is geared to advancing very expressive formalisms that add increasingly complex modelling constructs. However, this increase in language expressivity is often intrinsically linked to higher computational cost and often leads to formalisms that have high theoretical complexity and that are difficult to implement efficiently. In contrast, reasoning in the context of the Web has a distinct set of requirements, namely inference systems that can scale to planetary-size datasets. A reduced level of expressivity is often sufficient for many practical scenarios and crucially, absolutely necessary when reasoning with such massive datasets. These requirements have been acknowledged by active research towards more lightweight formalisms and also by industrial implementations that often implement only tractable subsets of existing standards. In this paper we aim to explore this trend and formulate a basic language, called $L2$, layered upon RDF as the data-model, that is inherently tractable, easy to implement on common rule engines and motivated by pragmatic considerations concerning the use of language constructs and the means to implement them.

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