On the Uptake of Semantic Web Technologies

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2006

Gartner on "Semantic Web" and "Corporate Semantic Web":

5 to 10 years to mainstream adoption

2006

The Advent of Linked Data

Transition from focus on *ontologies*

to focus on *RDF Data*

2010

Linked Data yields added value.

But there are quality issues.

2012

Linked Data yields added value.

But there are quality issues.

Rapid Adoption of Linked Data

Benefits:

- **Low barrier for finding and reusing data.**
- **Naïve combination of data easy.**
- **Become part of the Linked Data research train and hype.**

Cautions:

- **Not much help for semantic interoperability.**
- **Links to be taken with care.**
- **Best practices, methods, and tools not sufficiently developed.**

Summary

- **Immediate added value at low cost.**
- **Limited added value if it stops there.**

Danger Zone

Rapid adoption may lead to

- **underspecified data (due to missing or unclear ontological commitments)**

- **overloaded vocabulary terms, i.e. terms with multiple meanings in datasets, so that endowing them with a deeper semantics "later" becomes virtually impossible**

Possible consequences:

- **Substantial added value through semantification remains out of reach.**

- **Strengthening of semantics of vocabulary "later" may be very expensive.**

- **Data curation may no longer be feasible (e.g. due to loss of provenance- and other metadata).**

Trade-off

Reduce overhead by

- **reusing existing high-quality ontologies and ontology design patterns,**

- **having a clear understanding of the formal semantics of the adopted ontology language (e.g., OWL) and its implications, even if not fully used initially,**

- **beginning to plan the deep semantification *already in the early stages of the adoption of Semantic Web Technologies*.**

References

Krzysztof Janowicz, Pascal Hitzler, *The Digital Earth as Knowledge Engine*. [Semantic Web](#) 3 (3), 213-221, 2012.

Krzysztof Janowicz, Pascal Hitzler, *Key Ingredients For Your Next Semantics Elevator Talk*. In: Proceedings SeCoGIS 2012. To appear.

Gary Berg-Cross, Isabel Cruz, Mike Dean, Tim Finin, Mark Gahegan, Pascal Hitzler, Hook Hua, Krzysztof Janowicz, Naicong Li, Philip Murphy, Bryce Nordgren, Leo Obrst, Mark Schildhauer, Amit Sheth, Krishna Sinha, Anne Thessen, Nancy Wiegand, Ilya Zaslavsky, *Semantics and Ontologies for EarthCube*. 2012

Pascal Hitzler, Krzysztof Janowicz, Gary Berg-Cross, Leo Obrst, Amit Sheth, Tim Finin, Isabel Cruz, *Semantic Aspects of EarthCube*. EarthCube report of the Technology Subcommittee of the EarthCube Semantics and Ontologies Group, May 22, 2012.

References

Krzysztof Janowicz, *Observation-Driven Geo-Ontology Engineering*. Transactions in GIS, 16(3), 351-374, 2012.

Prateek Jain, Pascal Hitzler, Peter Z. Yeh, Kunal Verma, Amit P. Sheth, *Linked Data is Merely More Data*. In: Dan Brickley, Vinay K. Chaudhri, Harry Halpin, Deborah McGuinness: Linked Data Meets Artificial Intelligence. Technical Report SS-10-07, AAAI Press, Menlo Park, California, 2010, pp. 82-86. ISBN 978-1-57735-461-1. Proceedings of LinkedAI at the AAAI Spring Symposium, March 2010.

Pascal Hitzler, Frank van Harmelen, *A reasonable Semantic Web*. Semantic Web 1(1-2), 39-44, 2010.

Pascal Hitzler, Krzysztof Janowicz, *What's Wrong with Linked Data?* http://blog.semantic-web.at/2012/08/09/whats-wrong-with-linked-data/ , August 2012.

Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, *Foundations of Semantic Web Technologies*. Chapman and Hall/CRC Press, 2009.