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A roadmap for semantic technology adoption in UK higher education

Short Paper

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This paper discusses the current use of semantic technologies in the UK higher education, the value of these technologies for learning and teaching and a roadmap for semantic technology adoption by higher education institutions in the next five to ten years.This work is the output of the JISC funded project SemTech (Semantic Technologies for Learning and Teaching — www.semtech.ecs.soton.ac.uk). A survey on the current adoption of semantic technologies in higher education showed that relevant semantic tools and services can be:

- Collaborative authoring and annotation tools, semantic wikis, argumentation tools
- Searching and matching tools
- Repositories and Virtual Learning Environments
- Infrastructural tools and services for information integration

These tools can support pedagogical ends by enabling critical thinking, argumentation, context related recommendation of people and resources. In addition, they can respond to institutional challenges including student retention and support, student progress monitoring and integration of information inside or across institutions.

The project found that there is significant value for higher education institutions in the use of interoperable metadata based on semantic technologies like Resource Description Framework (RDF). This can provide for integration of datasources across higher education and more advanced searches. In addition, linked data can enable the emergence of ontologies to express the meaning of relevant learning and teaching resources and thus support advanced reasoning for pedagogical ends.

The envisaged roadmap involves the following stages:

- Stage one: deployment of a higher education linked data field. Technologies to expose institutional databases in RDF via SPARQL endpoints. Information integration across institutions and advanced searching and matching applications.
- Stage two: applications based on linked data. Mapping linked data to higher ontologies for specific domains. Recommendation of content relevant to teaching and learning activities.
- Stage three: emergence of more pedagogy aware applications. Agreement on ontologies within communities of teaching and learning practitioners and agreement on how linked data can be mapped to those ontologies.

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Tiropanis, T. Davis, H. Millard, D. and Weal, M. (2009) *Semantic Technologies for Learning and Teaching in the Web 2.0 era — A survey.* In: WebSci'09: Society On-Line, 18–20 March 2009, Athens Greece

O'Hara, K. and Hall, W. (2009) *Semantic Web.* In: Marcia J. Bates; Mary Niles Maack; Miriam Drake (eds), Encyclopedia of Library and Information Science Second Edition, Taylor & Francis. ISBN 978-0-8247-2075-9 (In Press). Available from eprints.ecs.soton.ac.uk/17126/1/hall-ohara-elis-semantic-web.pdf

Johnson, L. Levine, A. and Smith, R. (2009) *The 2009 Horizon Report.* Austin, Texas: The New Media Consortium

Semantic Technologies for Learning and Teaching (2009) Available from www.semtech.ecs.soton.ac.uk