

**“Towards P2P-based information systems for E-learning using  
semantic web technologies“**

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*Abstract:* Continuous "life long" learning plays a very important role in our society. While students at school and in higher education need to handle an ever increasing amount of knowledge, companies and employees need to adapt to quickly changing working situations, emerging and new knowledge and technologies. It is expected that these already high demands will even increase in the future.

In order to cope with these high demands learners need new ways to access and apprehend the new information while companies must be able to provide new information fast. Therefore they all rely on learning material and applications provided on the internet and tailored to their specific needs. The internet enables simple access to a large variety of courses, learning material and applications that help to satisfy respective needs. The catchword here is "blended learning" that describes the combination of old and new learning methods and technologies and their adaptation to recent and future demands.

Still, today's learning material and applications are not really suited for the continuously changing users demands. For example, one cannot easily exchange learning material and learning methods, the adaptation of learning material is usually restricted to applications, applications often cannot be tailored to emerging needs, etc. Therefore new and more advanced learning systems are necessary to meet these needs.

By combining peer-to-peer (P2P) approaches like Edutella with advanced data description languages as developed in the semantic web community and incorporating these concepts in modern information systems new generations of learning systems and learning management systems will emerge that are better suited to fulfil the needs of users, may they be learners or companies. P2P systems enable automated advanced and reliable search and retrieval methods for learning material thus capturing the vast amount of learning material provided on the internet. Languages of the semantic web, together with standards for learning material and methods provide the means by which such distributed information systems operate automatically to fulfil the users learning requests.