



A rchitecture of the Organic.Edunet Web Portal

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ABSTRACT

The use of Semantic Web technologies in educational Web portals has been reported to facilitate users' search, access, and retrieval of learning resources. To achieve this, a number of different architectural components and services need to be harmonically combined and implemented. This article presents how this issue is dealt with in the context of a large-scale case study. More specifically, it describes the architecture behind the Organic.Edunet Web portal that aims to provide access to a federation of repositories with learning resources on agricultural topics. The various components of the architecture are presented and the supporting technologies are explained. In addition, the article focuses on how Semantic Web technologies are being adopted, specialized, and put in practice in order to facilitate ontology-aided sharing and reusing of learning resources.

Keywords: learning object; organic farming; Semantic Web; Web portal

INTRODUCTION

Following their introduction and commercial growth after 2000, Web portals

have lately attracted increased research interest that focuses on a variety of aspects such as their business models, interface design, technical develop-

ment, or their quality (Mahadevan, 2000; Tatnall, 2005a; Moraga et al., 2006; Tatnall, 2007). The term Web portal has been initially used to refer to well-known Internet search and navigation sites that provided a starting point for web visitors to explore and access information on the World Wide Web (Warner, 1999; Winkler, 2001). A Web portal can be generally viewed as a single, distilled view of information from various sources that integrates information, content, and other software services or applications (Averweg, 2007). Therefore, today Web portals can be simply defined as *gateways to information and services from multiple sources*, and their continuous development has been highlighted by relevant publications (Tatnall, 2005b).

A type of Web portals with particular interest are educational ones (Conceicao et al., 2003; Boff et al., 2006). Educational Web portals generally serve as gateways to information and services of some learning or teaching relevance and may cover a variety of types. They range from institutional Web portals that provide access to course listings and institutional information (such as Ethridge et al., 2000), to community portals that serve the needs of particular communities of learning and practice (such as DeSanctis et al., 2001; Luke et al., 2004). One category of educational portals that have recently received considerable interest (Neven & Duval, 2002; Richards et al., 2002; Hatala et al., 2004) is that of Web portals that provide access to some organized col-

lection of learning resources. These portals usually facilitate users' access to the content in one or more learning repositories—that is, to database systems that facilitate the storage, location and retrieval of learning resources (Holden, 2003). Popular examples include both independent learning resources' portals such as MERLOT (<http://www.merlot.org>) and Teachers' Domain (<http://www.teachersdomain.org/>), as well as portals that list or aggregate learning resources from various other sources (e.g. other portals or repositories) such as OER-Commons (<http://www.oercommons.org>).

Richards et al. (2002) stress that Web portals with learning resources may offer a wide variety of services based on what they seek to give to the user community behind them, although the more common are those aimed at facilitating users' search, access, and retrieval of the resources. For this purpose, they include services that will facilitate these processes, utilizing different types of user-related information (such as personal preferences) or resource-related information (such as the learning resource characteristics). One of the most recent trends in portal development is the use of Semantic Web technologies (Maedche et al., 2001). Semantic Web is an evolving extension of the World Wide Web (WWW) in which web content can be expressed not only in natural language, but also in a format that can be read and processed by software systems, thus permitting them to find, share and integrate information more easily

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