

# Open Content Distribution Management in Virtual Organizations

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## INTRODUCTION

Future scenarios of **organizations** envision companies that are organized around a central **knowledge** base in the form of a **network**. It is assumed that each company contributes its own expertise and intellectual capital to the network's knowledge base. This article discusses the use of **open content** distribution management systems (OCDMSs) in knowledge-intensive fields, such as content production and software development, in order to ensure seamless and open collaboration between the firms in the organization.

OCDMSs offer participants several advantages. For instance, such systems can be seen as a way of enhancing the competitiveness of small and micro-sized knowledge-based firms by ensuring that each firm receives fair compensation for the content it develops. OCDMSs are revolutionary in the sense that they allow participants to contribute content to a common resource pool and add all the required **metadata** to the content. A common information pool where information is shared with well-defined rules lowers transaction costs between participating organizations. This article looks at one open content distribution management system that was developed in a university-industry research project and is being further developed by a company that is a spin-off company from the project.

## BACKGROUND

### Virtual Organizations

Developments in information technology as well as new organizational concepts have led to the emergence of new types of organizations. Miles, Miles, and Snow (2004), Miles and Snow (1995), and Miles, Snow, and Miles (2000) have discussed network organizations that rely on collaboration between independent units. The term virtual organization has become ever more commonplace in organizational literature. Walters (2004) discusses the busi-

ness model of the virtual or holonic organization and refers to McHugh, Merli, and Wheeler (1995) in listing the following properties of a virtual organization.

- The organization consists of businesses of equal standing; that is, there is no hierarchy between the individual businesses in a virtual organization.
- Information can be accessed and exchanged freely throughout the organization and across its boundaries; that is, the organization is open.
- The organization is evolutionary and is involved in constant interaction with its environment.

One interesting form of virtual organizing is the virtual web, defined by Franke (1999) as "the base of virtual corporations" (p. 211). According to Franke, a virtual web belongs to the typology of dynamic networks, as defined by Miles and Snow (1986), which has the following characteristics.

1. **Vertical Disaggregation:** Different organizations in the network perform separate functions that have been performed by functional units in a traditional organization.
2. **Brokers:** Brokers bring together the necessary functions available in the organization and play a leading role in building business units and subcontracting for needed services. Brokers can operate at different levels of a dynamic network and, thereby, have varying degrees of responsibility.
3. **Market Mechanisms:** These hold the network together and regulate its functioning. Competition is promoted amongst the members of the network and also with external companies, and this regulates the internal prices of the services available in the network.
4. **Full-Disclosure Information Systems:** Companies wishing to become a part of the network, even for a fixed-term project, are expected to connect their information systems to the network's continuously updated information system via broadband access in return for a general payment structure for the value they add to the network. The purpose of this,

according to Miles and Snow (1986), is to facilitate the rapid and mutual assessment of contributions and to speed up the trust-building process.

According to Franke (1999), virtual corporations are involved in temporary partnerships established by brokers in a virtual web in order to bring together the necessary combination of skills and resources. In order for a virtual web to successfully generate virtual corporations, the web must offer an environment that encourages the member companies to participate in virtual corporations without compromising confidentiality and intellectual property rights, while, at the same time, preserving the dynamic and flexible properties of the virtual corporation.

## Virtual Communities

Lee, Vodel, and Limayem (2003) have analysed various definitions of virtual communities and have identified four elements that they found common to most definitions. First, a virtual community should exist in cyberspace; that is, the members of a virtual community use computer-mediated spaces in order to interact. Second, the activities of a virtual community are supported by computer-based technologies, such as e-mail, message boards, and chat. Third, the main focus and content of virtual communities are participant driven, and the content of such communities is formed through the communication between the members of the community. The fourth and final element that Lee et al. found to be common to all virtual community definitions was the formation of a sustained relationship as a result of the interaction between the members of the community. Koh and Kim (2003-2004, 2004) have also observed cyberspace to be a usual feature for identifying virtual communities. However, they also found the interaction of many virtual communities to take place off line as well as online, especially in the case of communities that have originated off line. Koh and Kim's definition of a virtual community is "a group of people with common interests or goals, interacting for knowledge (or information) sharing predominantly in cyberspace" (p. 157). Etzioni and Etzioni (1999) point out the discrepancies in the definitions given for computer-mediated communities (CMCs) by different authors; some authors may refer to tightly knit communities while others to groups of acquaintances. The authors have found communities to have two common features: networks of relationships that may overlap rather than single links between the members, and a common set of values and norms to which the members of the community adhere and are committed and a common shared history.

One of the most productive virtual organization models is the free and **open source** software (later FOSS)

movement (see DiBona, Ockman, & Stone, 1999). It uses licenses that allow the use and modification of FOSS program components. Open-source licenses grant rights that are otherwise exclusive to the copyright holder. FOSS licensing enables the flexible but controlled use of software resources. FOSS is a multibillion-dollar business that has shown how less restrictive content sharing can lead to considerable benefits for the whole software industry and society at large.

The uncontrolled sharing of information goods leads to exploitation that does not benefit content providers or society in the long run. According to Kwok, Yang, Tam, and Wong (2004), digital and peer-to-peer (P2P) technologies have made it easier to produce and distribute illegal copies of copyrighted material. Thus, a virtual web that is supported by a common broadband information system, to which all the participants are linked, poses risks in terms of content and copyright management. Digital rights management (DRM) is one of the concepts for managing the rights of information products. Benkler (2002) points out how computers have changed copyrights into "privately created and enforced exclusion—created by contracts and enforced by technology" (p. 81). In most cases, DRM systems limit access to information through the use of technical protection measures. This does not serve the purposes of virtual organizations. While DRM might be an overly restrictive tool, some control is needed. This can be obtained by using digital rights expression (DRE).

## DIGITAL RIGHTS EXPRESSION

In the digital environment, it is possible to attach a license to a work. Most new music, image, and text formats have a field reserved for metadata. The attaching of metadata that describes the copyright status of a work is called digital rights expression. DRE uses semantic web methods to let users know of the permission that they have. Unlike DRM systems, DRE does not use technical means to restrict users from violating these terms.

One of the most commonly used ways of expressing digital rights is W3C's (World Wide Web Consortium's) resource description framework (RDF). It provides a foundation for the processing and exchange of machine-understandable information on the Web. RDF can be used for cataloguing (to describe content that is in a digital format on a Web page, in a digital library, or on a P2P network), for resource discovery (for example, to let a search engine search for works that have certain licenses), and by intelligent software agents (to facilitate knowledge sharing and exchange) in content rating. The W3C glossary (<http://www.w3.org/2003/glossary/>) defines metadata as "Data about data on the Web, including but

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