

## Chapter 4.11

# Social/Human Dimensions of Web Services: Communication Errors and Cultural Aspects. The Case of VRL–KCiP NoE

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### ABSTRACT

This chapter presents some recent studies of the social and human dimension of Semantic Web services in the era of virtual organizations, focusing on the challenges, effects, and implications. The issues and results presented refer to the virtual organization known as the Virtual Research Laboratory for a Knowledge Community in Production (VRL-KCiP), Network of Excellence (NoE). In this chapter the authors analyze the risks arising from the modern communication process in this new form of organization, focusing in particular on the knowledge sharing process. Furthermore, they discuss the cultural aspects of managing a

virtual organization that determine the efficiency of the knowledge management processes. The aim is to consider the challenges and the associated effect on developing Web services from the social/human perspective and to examine the impact on an organization's cultural dimensions.

### INTRODUCTION

Semantic technologies are “meaning-centered.” They include tools for auto-recognition of topics and concepts, information and meaning extraction, and categorization. Semantic technology software encodes meanings separately from data and content files, and separately from application code. The objective is to enable machines and people to share

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understanding and reason while programs are being executed. Semantic technologies then provide an abstraction layer above existing information technologies in order to bridge and interconnect data, content, and processes. Using semantic technologies, the process of adding, changing and implementing new relationships or interconnecting programs is relatively straightforward. From the portal perspective, semantic technologies can be thought of as a new level of depth that provides an improved, intelligent, relevant, and responsive interaction compared to that available with “classical” information technologies alone.

Hence, these technologies seem to hold the promise for improving communication and collaboration among dispersed organizations worldwide. This chapter discusses how such technologies functioned in a virtual organization involving numerous partners.

After describing the operations of the VRL-KCiP Network of Excellence (NoE) over the past three years, we briefly review the promising challenges of Web services. We then describe the Web services implemented and provided to VRL members. We show that even if these services are necessary for common and distributed work among the various partners, they alone cannot solve communication problems arising from misunderstandings. Based on the results of a previous study, we describe these misunderstandings and then examine cultural aspects of communication within the NoE which were determined to be critical factors in misunderstandings. These cultural dimensions cannot be handled technically but must be taken into account for Web services to be efficient.

## **THE CASE OF VRL-KCIP NOE**

The Virtual Research Laboratory for a Knowledge Community in Production (VRL-KCiP) is a Network of Excellence (NoE) established in 2004 as part of the EC Sixth Framework Programme

(Contract no. FP6-507487). The 27 member teams from 16 different countries (see Table 1) sought to create a new delocalized research structure at the European level, in which they would share research strategies, knowledge and resources, responsibilities, rights, and duties, as well as industrial contacts and contracts.

The idea behind the network (virtual organization) was to overcome fragmentation by applying the network principle to research. The NoE applied a multicultural approach both to the integration of modeling and simulation of knowledge-based production processes and to the relations among the joint partners. The objective of the VRL-KCiP was to support dynamic organizations, inter-enterprise operability, and necessary standardization. The network was driven by advances in virtual production, supply chain and life-cycle management, interactive decision-aid systems, development and rapid manufacturing. Incorporating these factors necessitated bi-directional relationships with industry. The virtual organization also aimed to benefit from the different approaches of the multicultural teams in treating common manufacturing problems and in promoting successful technology transfer. This would be achieved by incorporating emerging technologies driving new production paradigms in all phases of the complete/extended value-chain (design, production, distribution, use and end-of-life phases, including recycling) to allow development of new knowledge-based, added value and quality products and services in traditional sectors (Tichkiewitch, 2005).

The network attained industrial involvement and commitment by incorporating selected European industries to play a key role in providing industrial viewpoints on research relevance, research directions and awareness of integration activities and research topics related to production. Moreover, the joint research outcomes were publicized to attract and recruit new members.

Obviously, such a network is not primarily hierarchical in nature, and co-operation cannot be dictated from above. The research topics are

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