

Chapter 90

Interoperability Issues for Systems Managing Competency Information: A Preliminary Study

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ABSTRACT

This chapter has four sections. The first one describes how the needs for interoperability in exchanging competency information have been addressed so far. The second part adopts a “Digital Services Supply Chain” approach and discusses the issues related to the exchange of competency information across systems regarding this approach. The third part is the core part of this chapter. It describes the 4 levels of the proposed approach: the Conceptual Reference Model (CRM), the Semantic Model, the Information Model and the Data Model. The final section presents the research directions currently envisaged, and the research programme needed to make the proposed approach operational.

INTRODUCTION

We are living in a world of transformative change, where new and emerging technologies are being used increasingly for activities that support learning, education, and training (Thiriet et al., 2002; Schubert & Leimstoll, 2007). Competency frameworks, taxonomies, and Information Tech-

nology (IT) systems are being developed and used to support the management and exchange of competency information within and amongst organizations, government departments, and educational institutions (CEN, 2005; Thiriet et al., 2002; Lindgren, Henfridsson, & Schultze, 2004; Zouaq, Nkambou, & Frasson, 2007; Government of Alberta, 2005). At both local and international levels, it is essential that IT systems

DOI: 10.4018/978-1-4666-2625-6.ch090

can interface and operate cohesively (Owen, 1999 cited in Fleishmann, 2007). The development of IT standards at an international level can help to ensure consistency and efficiency of these different systems. This chapter will explore interoperability issues for systems managing competency information that are relevant to researchers as well as to practitioners.

HOW THE NEED FOR INTEROPERABILITY ACROSS DIGITAL SERVICES SUPPLY CHAINS HAS BEEN ADDRESSED SO FAR

Competency management has become a core issue in learning, education and training (LET). Research is ongoing within the field of education regarding the structuring and integration of competencies and skills in systems that support learning and education within countries as well as transnationally (Pacquette et al., 2007; Najjar & Klobučar, 2009). In the Human Resources Management (HRM) field during the last quarter of the 20th century we have seen extensive development of the use of IT systems; and, electronic processing of competency information has been progressively incorporated into daily operations within companies' Human Resources (HR) departments. Driven by international organisations like OECD, the shift from "knowledge-oriented" education to "competency-oriented" education has gained prominence in the academic area in the last three decades of the 20th century (Gardiner, 1994 cited in Sauber et al., 2008).

Knowledge sharing, innovative technology transfer, and lifelong learning are viewed as three key strategies that have the potential to enable humankind to successfully meet the challenges that are being encountered and that will be encountered in the years to come (Namara et al., 2007; Sherwood & Covin, 2008; Om, Lee, & Chang, 2007). However, underlying structures and technologies need to be in place in order

to support the communication and connections required to work together to develop and apply skills and knowledge in a manner that is ethical and sustainable (Morgan, Raidén, Naylor, G. 2008; Beer & Meethan, 2007; Bernstein & Cashore, 2007). Competency acquisition in the Knowledge society requires adaptive, flexible learning systems that support individual human development across multiple contexts, - education systems, work environments, informal learning opportunities, etc. (Pacquette et al., 2007). Interoperability between IT systems managing competency information in different sectors (companies, schools and universities, employment agencies, etc.) has become a critical issue.

Some Definitions that are Used in this Chapter

Definition of a Digital Services Supply Chain Approach

Configuring a Digital Services Supply Chain (DSSC) for Learning, Education and Training (LET) requires a holistic systems approach that documents the interrelationships and interconnections of constituent parts (Mentzer et al., 2001; Al-Turki, Dufuaa, Ayar, & Demirel, 2008; Beer & Meethan, 2007; Lummus, Krumwiede, & Vokurka, 2001). There are many stakeholders from different social "worlds" who have an interest in competency information, all with different views of the information and different terminologies about competency information. For example: "a learning objective" may be described in a Course Management System, but not in a HRM system. For LET applications, a Digital Services Supply Chain approach is defined as: process of the delivery of digital products and services from point(s) of origin (provider) to destination (stakeholder) to support learning, education and training.

Considering the information systems in each "world" as a DSSC and modelling them using the ISO/IEC Joint Technical Committee 1 Sub-

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