

# Chapter 1

## The War for Talent: Identifying Competences in IT Professionals through Semantics

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### ABSTRACT

*In current organizations, the importance of knowledge and competence is unquestionable. In Information Technology (IT) companies, which are, by definition, knowledge intensive, this importance is critical. In such organizations, the models of knowledge exploitation include specific processes and elements that drive the production of knowledge aimed at satisfying organizational objectives. However, competence evidence recollection is a highly intensive and time consuming task, which is the key point for this system. SeCEC-IT is a tool based on software artifacts that extracts relevant information using natural language processing techniques. It enables competence evidence detection by deducing competence facts from documents in an automated way. SeCEC-IT includes within its technological components such items as semantic technologies, natural language processing, and human resource communication standards (HR-XML).*

### INTRODUCTION

The use of IT solutions has become a key issue in many organizations worldwide. Organizations currently use multiple IT/IS solutions to support

their activities at all management levels (Trigo, Varajao, & Barroso, 2009). Software costs as a percentage of total computer system costs continue to increase; while associated hardware costs continue to decrease (Huang & Lo, 2006). Software development is a collaborative and knowledge

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intensive process where success depends on the ability to create, share and integrate information (Walz et al., 1993), among other factors. Software development is an intense human capital activity, especially intense in intellectual capital (Sommerville & Rodden, 1996). Although the importance of human factors has been widely recognized as key for software engineering, researchers should put a larger focus on the humans involved in software engineering than what has been done to date (Feldt et al., 2008). However, poor management of human factors in technical projects, and software engineering projects can be considered as technical projects, can hinder the use and effectiveness of technology (Ives & Olsen, 1984).

Individual differences have been identified as one of the paradigms for the research of human factors in software development (Curtis, 2002). IT workers' professional practice must be continually revised and improved in order to adapt workers competences to technical innovations, and their soft skills to evolving markets (Casado-Lumbreras et al., 2009). In this scenario, competence at the individual level is required for the creation of core competence, which is crucial for today's organizations at the structural level (Bassellier, Reich, & Benbasat, 2001). But in spite of this importance, the world is facing an IT professionals shortage. Thus, attracting students in order to shape tomorrow's labor horizon has become a major issue of concern in educational institutions (Garcia-Crespo et al., 2009). According to the analysis by Morello, Kyte, and Gomolsky (2007), many young people see IT as an unattractive career option: it is both hard work and "uncool". Additionally, this negative image is confirmed by the paradox that the strategic contribution of IT is recognized within enterprises, but the status of the IT department is low (Avison, Cuthbertson, & Powell, 1999). The shortage of IT professionals has been pointed out by many authors (e.g., Acharya & Mahanty, 2008; Agarwal & Ferratt, 2002; Mithas & Krishnan, 2008; Wells & Bogumil, 2001). As a consequence of this, the war for talent (Michaels, Handfield-

Jones, & Axelrod, 2001) in the IT sector has its battlefield outside and inside the company and the internal recruitment of professionals must be done basing selection requirements against competence evidences. But in spite of the importance of competence evidences and knowledge sharing proficiencies pointed out by Liebowitz (2009), only a small number of companies have access to this data and develop their repository throughout the year.

Given the need of the corporations around the world to get competence evidences in a trusted and automatic way SeCEC-IT is presented in this paper. SeCEC-IT is a tool that based on the work performed by IT professionals in the context of software engineering development projects, extracts relevant information from software artifacts (programs, documents, ...) using natural language processing and enables competence evidence detection by deducing competence facts in an automated and semantic way. These competence facts can be transferred to common human resource management tools that can exploit this information using competency management interchange standards so that it can be used for internal recruiting to projects, or to support knowledge management issues.

The remainder of this paper is organized as follows: the relevant literature in the collection of competence evidences is outlined and the main research efforts about semantic technologies are summarized. The architecture for the SeCEC-IT approach is presented along with the description of the implementation of the proof of the concept architecture. Finally, conclusions, implications for HRM, and future work are discussed.

## **COLLECTING EVIDENCES OF COMPETENCE**

Competences and competence management has proved to be an extremely important area of study including fields such as pedagogy, psychology,

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