



Enhancing Enterprise Resource Planning users' understanding through ontology-based training

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ABSTRACT

An ERP system is a set of highly integrated and parametric applications, designed to fit to a variety of business. Because of this inherent complexity its implementation can be very demanding and the users involved must undertake extensive training, using sophisticated training materials. Existing training materials present major weaknesses, that the current paper aims to overcome, such as (1) semantic inconsistencies, (2) lack of explicit definition of constructs and (3) lack of knowledge reusability. This paper proposes a prototype model for the design and development of ERP training material, where both the multimedia objects used in training scenarios and the knowledge built into them are captured and fully reusable. The proposed approach helps trainees understand: (i) which are the building blocks of an ERP application, (ii) how they relate with each other and (iii) how they can be used in order to solve business specific problems.

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1. Introduction

An ERP system is a set of highly integrated applications, consisting of applications modules, which can be used to manage most of the business functions within an organization. An ERP system is designed in a way that will fit to a variety of different types of business. This is achieved through the extensive use of multiple levels of parameters, which when set properly, can adapt the ERP system to the specific needs of the organization implementing it (Soffer, Golany, & Dori, 2003).

A common theme in ERP literature is the inherent complexity of ERP systems (Bingi, Sharma, & Godla, 1999), and extensive training is needed in order to help managers and users solve problems within the framework of the system. Computer-based training via Intranets and/or through the Internet has been found to facilitate ERP implementations (Mahapatra & Lai, 1998) and therefore ERP vendors are using extensively the Web as their preferred environment in order to provide ERP users' education and training (Macris, 2004).

Most of the existing automated training aids for ERP applications only provide for manipulating and restructuring multimedia objects and not for externalizing the underlying logic for the knowledge domain under consideration, making it explicit and therefore diffused and reusable. To accomplish this, a method that considers the fundamental building blocks of the perception process is needed. Perception is the process of building a working

model that represents and interprets sensory input (mosaic of percepts) into a more abstract part (conceptual graph) (Novak & Gowin, 1984; Sowa, 1984, chap. 3). A conceptual graph is made of concepts (the simplest possible self-contained entities) and the relations between them. Therefore, when a trainee is asked to understand the training material accompanying a training process, the act of consuming this material can be modeled as a two stage process: (i) the analysis process, where the material is broken down into concepts and (ii) the synthesis process where concepts are linked to other concepts (found in the training material on hand and other related material that the trainee has already analyzed before) in order to form more complex structures (conceptual graphs).

The term "semantic web" encompasses efforts to build a WWW architecture that enhances content with formal semantics (which are stored in the form of meta-data, or data explaining the meaning of content) in order to enable better possibilities for navigating through the cyberspace and accessing its contents. That means semantic web content is made suitable for machine, too, consumption, as opposed to traditional WWW architectures where content is only intended for human consumption (Stojanovic, Saab, & Studer, 2001). Therefore semantic web constitutes an environment where human and machine agents are able to communicate on a semantic basis and automated agents (web services) are able to reason about web content and produce an intelligent response to unforeseen situations (Berners-Lee, Hendler, & Lassila, 2001; Sycara, 2004). Shared understanding, one of the primary characteristics of the semantic web architecture, uses ontologies as its key backbone that enable the organization of domain knowledge around small pieces of

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semantically enriched constructs (Nejdl, 2001; Vargas-Vera & Lytras, 2008).

This paper describes a methodology for developing ERP training materials, both for use in the classroom and in actual companies, that represents the knowledge found interspersed throughout existing material for ERP training applications in the form of knowledge networks (collections of educational scenarios serving specific educational needs) that will stimulate the process of anal-

ysis and synthesis of knowledge discussed, based on the principles of the semantic web and that will help the user decode and comprehend: (i) which are the building blocks of an ERP application, (ii) how they relate with each other and (iii) how they can be used in order to solve business specific problems. Fig. 1 shows how the proposed approach transforms existing training materials by making explicit the knowledge found interspersed into these materials. Since the proposed approach is based on the principles of the

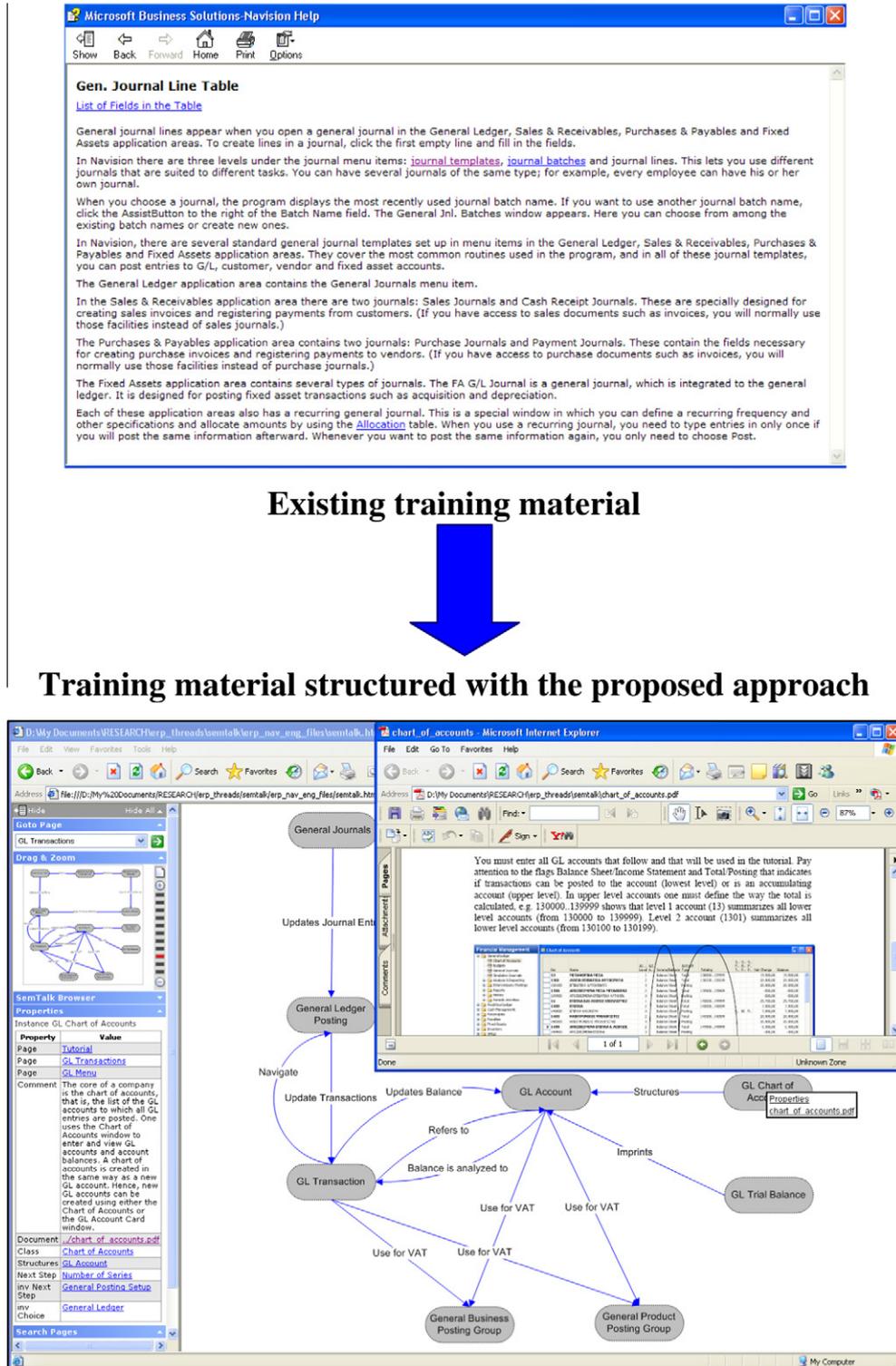


Fig. 1. Making explicit the knowledge found into training material.

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