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Research Note

A knowledge management approach to capture organizational learning networks

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ABSTRACT

Effective knowledge management practices in organizations are focused on knowledge creation and knowledge transfer activities. Thus, intelligence and competencies matters at the organizational workplace. For most knowledge intensive organizations is fundamental the continuous availability and development of domain expertise. This paper describes an ongoing research project to develop an organizational knowledge architecture that is being specified and developed to support collaboration tasks as well as design and model predictive data analysis and insights for organizational development. The primary goal of this research is to create a suitable architecture for use, initially, in intranet (corporate portal) collaborative procedures, but also scalable for later use in more generic forms of ontology-driven knowledge management systems. The designed architecture and functionalities aim to create coherent web data layers for intranet learning and predictive analysis, defining the vocabulary and semantics for knowledge sharing and reuse projects. Regarding intellectual capital definition, this research argues that effective knowledge management are based on the dynamic nature of the organizational knowledge, and predictive data analysis and insights identification can transform and add value to an organization. This paper presents a knowledge management and engineering perspective (ontology based) for the application of predictive analysis and insights at the organizational (corporate) workplace towards the development of the organizational learning network.

1. Introduction

The development of knowledge network communities has been an aspect of the corporate intranets and knowledge portals, and it has ever since enabled the connection of human resources with corresponding interests, regardless of time and space restrictions. In spite of in the beginning the organizational intranets was known or seen as a simple repository of information and data where employees and stakeholders do not necessarily implied a strong bond among the organizational network community, that has changed with the increased availability of user-generated content mechanisms and with the growth of social networking services, as well the continuous growth of intranet (and web 2.0) management technologies.

Corporate intranets (along with the Internet) became the hub of socialization and knowledge sharing; became the logical extension of our human tendencies and learning, that have been tailored our society and our cultures. Those reflected tendencies towards an individual-centered approach whereas group-centered activities, creating context

where each individual contributes to the intellectual climate and technological infrastructure of society, rather than the effects of media itself. Organizational learning communities are a phenomena usually built upon multidisciplinary and innovative collaborative stakeholders which grow within the organizational workplaces.

The following section describes the knowledge management and engineering approach, including the knowledge elicitation and acquisition techniques and an ontology design methodology. The following sections present the main knowledge management focus of this research: managing intellectual capital in organizations, and a research approach to capture the organizational learning network. The design approach being used to model the organizational network applies conceptual maps and ontologies.

2. Knowledge management and engineering approach

Knowledge management (KM) refers to identifying and leveraging the collective knowledge in an organization (Krogh, 1998). KM systems

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refer to a class of information systems applied to managing organizational knowledge, and are developed to support and enhance the organizational processes of knowledge creation, storage, retrieval, transfer, and application, mainly at organizational (corporate) workplaces.

We consider the organization definition stated as a social unit of people, which are systematically structured and managed to meet a need or to pursue collective goals. An organization has a management structure that determines relationships between functions and positions, and subdivides and delegates roles, responsibilities, and authority to carry out defined tasks. Organizations are open systems in that they affect and are affected by the environment beyond their boundaries (Business Dictionary-Organization Definition, 2017).

In the knowledge-based economy organizations are facing systematic changes. KM focuses on techniques of managing a common base of organizational knowledge that allows heterogeneous organizational groups, functions and communities to coordinate their efforts and share knowledge across time, function, discipline and task specific boundaries (Configuring software, 2016). In addition, knowledge may be geographically distributed and stored in a variety of different representations, e.g. tacit knowledge in researchers' minds and structured information in databases.

2.1. Ontology design and development

The term “ontology” has its origins in metaphysics and philosophical sciences. In its most general meaning, ontology is used to explain the nature of reality. There are at least a dozen of definitions of ontologies in computer science literature, but the most widely cited is that provided by Gruber (1993). An ontology is a high-level formal specification of a knowledge domain: it is a formal and explicit specification of a shared conceptualization.

A conceptualization is an abstract view of particular real-world entities, events and relationships between them. Formal refers to the fact that an ontology is a form of knowledge representation and has a formal software specification to represent such conceptualizations, for example, an ontology has to be machine-readable. Explicit means that all types of primitives, concepts and constraints used in the ontology specification must be explicitly defined. Finally, shared means that the knowledge embedded in ontologies is a form of consensual knowledge, that is, it is not related to an individual, but is accepted by a group.

Ontology design and development can be approached from several different perspectives: inspirational, inductive, deductive, synthetic and collaborative (Holsaple & Joshi, 2002). In recent years, there has been a move towards integration of these different styles (Edgington, Choi, Henson, Raghu, & Vinze, 2004). The underlying ontology-driven

software design method (Fig. 1) also attempts to integrate these different styles by focusing on a collaborative approach and building on existing ontology research, such as the Enterprise Ontology (Uschold, King, Moralee, & Zorgios, 1997), ontology design (Swartout & Tate, 1999), and ontology development, a guide to create an ontology (Noy & McGuinness, 2001).

2.2. Context conceptual maps

This research project aims to contribute in this direction: to design an ontology-driven KM tool to support research cooperation and organizational knowledge development. The design of conceptual maps underlies a collaborative (organizational) approach. Conceptual maps are a graphical representation (Schermann, Böhm, & Krcmar, 2009) which provides preliminary exploratory insights that lead to the development of ontologies to apply on predictive analysis and insights identification.

Conceptual models are a prerequisite for successfully planning and designing complex systems (Jeusfeld, Jarke, Nissen, & Staudt, 2006; Moody & Shanks, 2003; Pereira & Mira da Silva, 2012; Pereira, Almeida, & Mira da Silva, 2013) and have been employed to facilitate, systematize, and aid the process of information systems (IS) engineering (Pereira et al., 2013). Yet, conceptual modelling is also suitable to systematize knowledge, provide guiding research and map a portion of reality (Järvelin & Wilson, 2003).

The expected resulting ontologies are based on the social (organizational) learning domain.

Knowledge may be tacit or explicit (Nonaka, 1994). Knowledge can refer to an object, a cognitive state, or a capability and may reside in individuals, social groups, social systems, documents, processes, policies, physical settings, or computer applications and databases (Alavi & Leidner, 2001).

The intangible (or less tangible) value of the organization is generated from informal activities that help build business relationships and contribute to operational effectiveness (ValueNetworks, 2017). From these informal activities can result more intangible knowledge assets. These intangible assets can be seen as knowledge and benefits extended or delivered by an individual or group, that are informal but still have value for the organization. The combination of the less tangibles of an organization, i.e. human, structural and relational capital, is called intangible capital or intellectual capital (IC) (Adams & Oleksak, 2010).

The collaborative design process of a conceptual map is an effective approach to capture intellectual capital. It is not always possible to capture intellectual capital within the workplace of organizations because they are somehow invisible in conventional forms of information systems

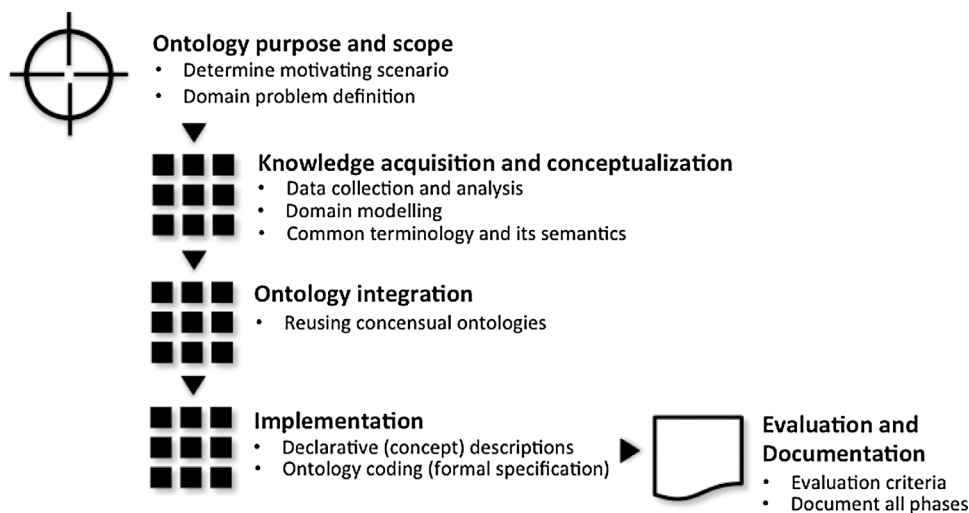


Fig. 1. Ontology development method.

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