

Experience Management in Communities of Practice

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Abstract. In this paper, we describe how Communities of Practice (CoP) can be seen as a means to realize Experience Management (EM). We start by presenting a model to guide the process of CoP formation and maintenance. This model is then extended to include methods for (1) the analysis of the different requirements of the involved parties, and (2) the design of EM support systems in CoPs that implement answers to those requirements. This framework, which is based on multi-agent concepts, enables the design of CoP support systems that incorporate the principles of collaboration and internal autonomy.

1 Introduction

In the last decade, organizations have discovered the potential of CoPs to the sustainable advantage of business practice and the realization of strategic objectives [12]. This realization has led to the creation of *sponsored CoPs* and the nurturing of *emergent CoPs*. Either informal or sponsored, CoPs aim at stimulate interaction, decrease the learning curve of new employees, respond more rapidly to customer needs and inquiries, prevent *"reinvention of the wheel"*, and generate new ideas for products and services. Advantages of CoPs include the potential to overcome the inherent problems of a slow-moving traditional hierarchy in a fast-moving virtual economy, the ability to handle unstructured problems and to share knowledge outside of the traditional structural boundaries. CoPs also provide adequate means of developing and maintaining long-term organizational memories. However, it is important to note that CoPs cannot be forcibly created, but they may be fostered by creating the conditions, both social and technological, for a community to emerge [6, 7].

Experience Management (EM) as a sub-discipline of Knowledge Management (KM) deals with collecting, modelling, storing, reusing, evaluating, and maintaining experience knowledge, i.e., specific knowledge situated in a particular problem solving context [9]. In organizational contexts, experiences and know-how are often shared within practitioner groups, or CoPs, that take care of maintaining, extending and teach their knowledge about certain tasks.

The design of CoP support systems, either of a technological or a procedural nature, must take in account the different perspectives of its members (i.e.

novices, experts, newcomers), organizational stakeholders and the organizations structure. Furthermore, CoP support systems must focus on the building of social capital (such as trust, identification, norms and reciprocity relations), which provides a continuous basis for sustainable advantage and innovation. When these requirements are met, experience management systems will likely be accepted and effectively used by the members of the CoP.

This paper presents exploratory research on how CoP can be seen as a medium for EM. Clearly, there are similarities between CoP and EM. However, an important difference is that CoPs are mostly informally regulated and exchanges of experiences and knowledge are locally organized between the members. In order to enable efficient EM within CoPs in a way that benefits the whole organization, support systems are needed that implement the transfer and maintenance of experience. We call these support systems CEM: Community Experience Management systems. Due to the specific characteristics of a CoP, CEM systems should respect the autonomy of CoP members, and the inherent distribution of resources, problem solving capabilities and responsibilities [2]. Furthermore, it is important on the one hand, to assure that activity conforms to (existing) organizational norms and aims at the realization of global goals. This calls for an autonomous and distributed design of CEM systems.

The agent paradigm offers an effective way to model and analyze complex systems composed of multiple and distinct components. CoP models require the integration of individual desires with organizational requirements. Using agent models, an organization can be seen as a set of agents that exhibit flexible, responsive and proactive behavior and whose interactions are regulated by mechanisms of social order and are created to achieve common goals. In this paper we argue that both the methodologies to elicit requirements for CEM systems, and frameworks to model such systems, can profit from multi-agent concepts and models. We introduce the Tropos methodology [3] as a means to elicit and represent the requirements and perspectives of the different entities involved in an CEM system, and the OperA model [4] as specification for integration of organizational processes and goals with the different individual perspectives of the actors (people, groups and possibly systems) involved. In order to motivate this, we first shortly introduce CoPs and a method that supports the creation and maintenance of Cops.

2 The SES model for CoP facilitation

CoPs are of great importance for organizations due to their potential to contribute to synergy across business units. Existing CoPs in different organizations confirm that motivation of the management and the employees, as well as the choice of infrastructure for collaboration, communication and information are crucial for the success of CoPs.

The SES (Seduce, Engage, Support) Model was developed to facilitate the development of CoPs across an organization [6]. SES can be seen as a community-centered development in the sense that the characteristics and needs of the com-

munity members are leading and prior to any decisions concerning technology and social structure [11]. The model combines lessons learned, success stories and collective experiences, skills and tools from previous projects, in a way that is easily identified and understood by the organization. The SES model identifies four groups of actors involved in the activity and development of a community: initiators, members, stakeholders and organizational context.

The process of creating a CoP usually starts with the identification of similarities of business processes or background shared by a group of people. CoP initiators realize that the organization can profit from the nurturing and encouragement of such a group as their activities are essential for the achievement of strategic priorities of the organization. Often, but not always, there is already a small group of people that have some form of contact with each other, mostly at local level, but in some cases also across locations and business units. Such contacts are usually informal and not explicitly recognized by the organization. The formation of a community will enable the knowledge and results of the group to be optimally managed and distributed through the organization.

The aim of the **Seduce** phase is to create a feeling of anticipation about the CoP on both its potential members as on the organization as a whole. During the Seduce phase, the context and aims of a CoP are identified and described, potential members are made aware of their connections and common interests or objectives. The aim of the second phase, **Engage**, is to design a community that is as closely related as possible to the requirements and wishes of the members and which tasks and targets are well embedded in the strategic priorities of the organization. CoP members are actively involved in the development of the CoP. Furthermore, Engage activities concern the definition of a clear and explicit link between the targets of the CoP and the strategic objectives of the organization. The third phase, **Support**, is concerned with the consolidation and continued evolution of the CoP, in terms of guaranteeing *infrastructure* (i.e. the creation and facilitation of support for CoP activities), *social structure* (i.e. identification of members, their requirements and preferences, and the specification of the social structures and interactions) and *monitoring* (i.e. check how well the CoP is meeting its targets, whether members are satisfied with CoP activities).

3 Supporting Experience Management in CoPs

The SES model presented in the previous section enables the definition of CoP objectives and requirements and facilitates the involvement of potential members and stakeholders. However, SES does not directly support the development of CEM systems. CoPs are social in nature, which means that in most cases, systems geared to the support of collaboration between members are more effective than pure KM systems that are concerned with the formalization and maintenance of knowledge assets. Links between members of distributed CoPs can be strengthened by webs of communication technologies, but technology is not always needed in order to support CoPs. In general, systems that support collaboration within CoPs are expected to meet the following objectives [1, 5]:

stimulate sharing of relevant knowledge in a dynamic, collaborative environment, preserve individual autonomy and contribute to the creation of an atmosphere of trust between participants, and provide links between individual action and company structure.

3.1 Requirement and Goal Analysis

In order to develop a support system for a CoP, it is necessary to identify the requirements and objectives of the different groups concerned. Intentional Analysis has been effectively used to analyze the requirements of KM systems, as it enables to model organizational stakeholders and their goals and mutual dependencies [10]. The analysis of the organizational context where the CoP will be functioning makes sure that expectations and requirements of stakeholders and members are considered and incorporated in the CoP design. This analysis enables understanding the rationale behind the CoP and its integration into the organization, and facilitates the elicitation of requirements of infrastructures that can support them. Table 1 gives an idea of how analysis of objectives and requirements can lead to the identification of the functionality of the CEM system.

Group	Objectives	Requirements	CoP Answer
Organization	- sustainable advantage; - innovation	- overall availability of knowledge; - fulfilment of norms and regulations	- structure reflects norms and interactions; - medium for knowledge sharing and management
Stakeholders	- know-how; - learning	- support for newcomers; - sharing best-practices and experiences	- offer specific support for different user groups; - knowledge management
Individual members	- career; - enjoyment; - learn; - share	- autonomy of action and methods; - control over own interaction	- different interaction forms; - personalized search; -request and publish of information

Table 1. Requirement Analysis for CoPs

Tropos [3] is a methodology based on Intentional Analysis that has been used in the context of Knowledge Management to, e.g. elicit distributed KM needs [10], and to model the requirements of the different CoP actors [8]. Tropos distinguishes between early and late requirements phases and considers both inter-agent and intra-agent issues. The early requirement phase is concerned with the understanding of the application by studying an organizational setting. This phase generates two models: strategic dependency model and strategic rationale model. These models specify relevant actors, together with their goals and inter-dependencies. In particular, the strategic dependency model describes an "agreement" between actors. The strategic rationale model determines through

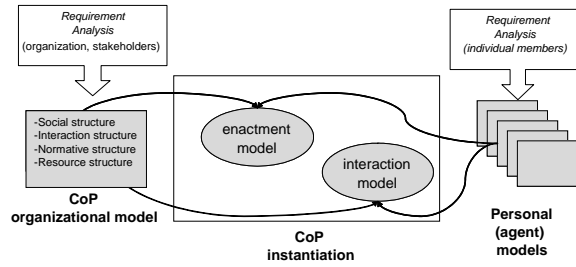


Fig. 1. Abstract OperA model for Communities of Practice.

a means-ends analysis how an actor’s goals (including soft-goals) can actually be fulfilled through the contributions of other actors. In the late requirements phase the system-to-be within its operational environment is described. It results in a requirements specification, which describes all functional and non-functional requirements for the system-to-be.

3.2 Design of Support Systems

Once requirements and goals of a CoP have been identified, support systems can be designed to meet them. The use of agent concepts to model CEM systems can be seen from two perspectives. Firstly, agents are often used to model the organizational environment where the KM system will operate and, secondly, software agents can be used to implement different functionalities of CEM systems (e.g search, learn, negotiate exchanges, etc.). While the second perspective has a clear technological function, agent, or actor, models can, if deemed useful, be put in place without any use of technological support, but enable a overall view of the different actors, dependencies and communication flows.

OperA [4] is an agent-based framework for the design of organizations that meets the perspectives above. The OperA Model integrates a top-down specification of society objectives and global structure, with a dynamic fulfillment of roles and interactions by participants. The model separates the description of the structure and global behavior of the domain from the specification of the individual entities that populate the domain. Agents are actors that perform role(s) described by the society design. The agent’s own capabilities and aims determine the specific way an agent enacts its role(s). An OperA model can be thought of as a kind of abstract protocol that governs how member agents should act according to social requirements. Interaction is specified in contracts, which can be translated into formal expressions, and therefore ensure that compliance can be verified. The OperA model consists of a 3-layered model that separates the concerns of the organization from those of the individual. On the one side, the *Organizational Model*, implements the objectives and requirements of the organization and stakeholders, such as in table 1 in terms of the specification of roles, dependencies, norms and interaction scenes. On the other side, *Individual*

Models take in account that individual participants are heterogeneous, have their own requirements and follow their own goals and desires. The integration of both sides is described in two models: the *Enactment Model* that describes the agreed agent interpretation of the organizational design, and the *Interaction Model*, that describes the activity of the system as realized by the individual agents. Figure 1 gives an abstract representation of a CoP model according to the OperA framework. Due to space limitations, it is not possible to give here a more detailed description of the OperA model. In [5] we presented a case study of the application of the OperA framework to the design of a CoP for insurance product developers.

4 Conclusions

The management of knowledge and experiences is one of the most important tasks and aims of a CoP. In this paper we discuss how a methodology to analyze and design CEM systems to support the management of experiences in CoPs. This framework enables the design of CoP support systems that incorporate the principles of collaboration and internal autonomy. We are currently working on the formalization of this analysis and design framework for the specific context of CoPs. The framework is also being tested on some case studies.

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