Strategic Knowledge Worker Features in the Context of Communities of Practice

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***Abstract*—Communities of Practice (CoPs) provide a good medium for effective utilization of knowledge workers and group innovation in an organization. It is also an organizational instrument for developing competitive advantage based on chosen business strategy. For effective operation of CoPs and utilization of organizational resources business strategy and knowledge sharing attributes of knowledge workers play a key role in effective design of CoPs. Furthermore, to enable effective implementation of CoPs, an IT enabled knowledge hub is considered useful. This research combines the above mentioned components to develop a CoPs enabled knowledge hub. This research can help organizations to design and implement CoPs based on business strategy and knowledge sharing attribute fit.**

***Index Terms*—Communities of Practice, Knowledge Worker Feature, Personality Traits, Knowledge Hub**

I. Introduction

Organization's ability to maintain and leverage knowledge has become a factor of strategic importance in today's knowledge based economy and therefore Knowledge Management (KM) has become a popular topic in both academia and industry (Parise & Henderson, 2001). KM deals with creating, codification, transferring and maintaining organizational knowledge (Davenport & Prusak, 1998), and over years most of the KM has coped only with explicit knowledge but leaving the tacit knowledge unharnessed. Communities of Practice (CoPs) have been identified as an effective way to create, transfer and maintain tacit knowledge.

The term of CoPs was introduced by Lave and Wenger (1991) in the context of situated learning but however it was later redefined owing to its practical implication. CoPs was originally identified as self emerging groups but however studies showed that organizations cultivate CoPs with managed membership (John & Patricia, 2000) because of its strategic importance. Chu et al (2007, 2009) envisioned four strategic alternatives for CoPs based on operation mode and organization performance, namely, Increased Core Competency, Promoted Responsiveness, Induced Innovation, Enhanced Work efficiency. These strategic alternatives can be compared to four types of communities identified by Vestel (2003). Koeglreiter and Torlina (2008) argued that knowledge work should be aligned with organization objectives. Organizations develop CoPs with managed membership and therefore knowledge worker who fits the CoPs and its strategic objective is of at most importance.

Organizations invest resources in terms of people, technology and content (Grant, 1996) to create and foster CoPs and therefore these resources has to be utilized optimally. Cultivating CoPs does involve several challenges. McDermott (2004) identified four key challenges, one of which is characteristics of community members. Therefore identifying the suitable candidate for CoPs is vital, lack of which can lead to lower momentum and knowledge sharing benefits in communities and thereby under utilizing the resource.

Several researchers have studied the motivators of knowledge sharing, most of which are situational characteristics only limited study has been done involving the personality traits. This study aims at bridging the gap by profiling knowledge workers for CoPs based on personality traits taking the strategic alternatives of CoPs into account. The detailed IT based knowledge hub is also designed to facilitate effective design of CoPs.

Section 2 illustrates the literature review related CoPs and the personality traits affecting knowledge sharing. Section 3 discusses the measures of personality trait to motive knowledge sharing. Section 4 describes the components of IT infrastructure as knowledge hub based on knowledge sharing and business strategy. Section 5 concludes this paper.

II. Theoretical Development

Knowledge as defined by Davenport and Prusak (1998) is a mix of experience, value and information. It resides in the organization routines and norms. Global competition and its ability to provide competitive

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advantage has made knowledge an important asset (Prahalad & Hamel, 1990; Saint-Onge & Wallace, 2003), and therefore acquiring and leveraging knowledge has become a factor of strategic importance (Drucker, 1993).

CoPs can be defined as groups of people who share a concern, set of problems, or a passion about the topic and who deepen their knowledge and expertise in this area by interacting on an ongoing basis (Wenger et al., 2002). The term CoPs was initially introduced by Lave and Wenger (1991) in the context of situated learning where learning happens by means of legitimate peripheral participation which was later modified based on business needs. Brown and Duguid (1991) defined CoPs from an organization perspective as group of workers doing similar jobs. Wenger's (2002) regarded CoPs as knowledge workers who can be redefined as the characteristics of deepening the knowledge and expertise belongs to knowledge workers. In this context, knowledge workers can be defined as the workers who use their knowledge in accomplishing their task and also require systematic training in updating their skills (Drucker, 1969).

CoPs are identified as self emerging groups but the strategic importance of communities of practice has made organizations to look into the possibilities of identifying and creating CoPs. Quite a few researches have suggested guidelines and models for creating CoPs (Wenger et al., 2002, Loyarte & Rivera, 2007, McDermott, 1999). Among those models, many organizations create communities with managed membership accordingly (John & Patricia, 2000). Resources in terms of technology, people and content are then invested to develop CoPs (Grant, 1996) and these resources have to be utilized optimally.

CoPs which involve knowledge workers are an effective entity for creating knowledge and innovation. However, given that knowledge and know-how is employed by organizations for competitive advantage it is important it firstly that knowledge and CoPs are underpinned in business strategy and organizational performance in an organization. Secondly, knowledge sharing among knowledge workers is critical to effective functioning of CoPs as otherwise CoPs can easily lose momentum overtime to the detriment of the organization. Knowledge sharing among knowledge workers is influenced by their know-how as well as their knowledge sharing personality traits. Finally, in order to realize the benefits of CoPs an IT framework or knowledge hub is essential for a progressive and agile organization. Even in IT strategy research literature the need for alignment between IT and business strategy has been emphasized.

All the above ingredients or components are captured in Figure 1 and are the focus of this paper. These components when put together will help to establish CoPs-Centred Knowledge Banks and CoPs-centred IT framework or portal.

Chu et al., (2007) envisioned four strategic business alternatives for CoPs based on operation mode and Organization performance: Increased Core Competency, Promoted Responsiveness, Induced Innovation, and Enhanced Work efficiency. These strategic alternatives as shown in Figure 2 can be compared to four types of communities identified by Vestal, 2003). Koeglreiter and Torlina (2008) argued that top down approach of aligning business strategy with knowledge strategy may lead to a formal structure, since CoPs is mostly informal the alignment should happen in bottom-up way, i.e. knowledge work should be aligned with organization objectives. Organizations develop CoPs with managed membership and therefore knowledge worker who fits the CoPs and its strategic objective can facilitate the knowledge sharing benefits.

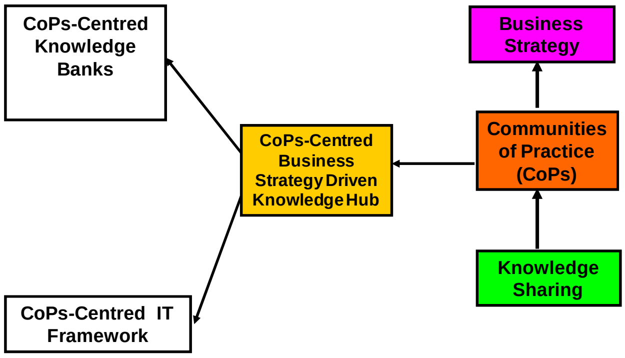

Figure 1.Strategic CoPs Framework

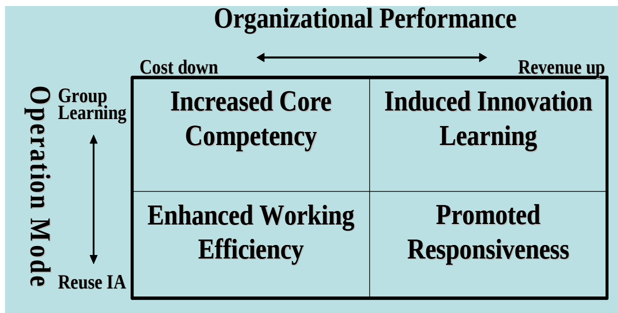

Figure 2.Four Strategic Alternatives of CoPs (Chu et al 2007)

Knowledge sharing is affected by several factors and researchers have studied these factors. The factors identified by various researchers can be grouped into four categories: extrinsic, intrinsic, personality traits, relationship factors and organization culture/climate. Figure 3 depicts these five categories. Extrinsic motivators like rewards, reciprocity (Cabrera & Cabrera, 2002; Zmud & Lee, 2005; Bartol & Srivastava, 2002); intrinsic factors such as sense of self worth (Zmud & Lee, 2005), self-efficacy (Kankanhalli et al., 2005; Lu et al., 2006); personality traits like agreeableness (Todd et al., 2006b; Namjae et al., 2007) and conscientiousness (Namjae et al., 2007); interrelationship factors like trust (Politis, 2003; Levin et al., 2002; Levin & Cross, 2004), identification (Cabrera & Cabrera, 2002); Organization culture/climate like fairness, affiliation, innovativeness (Zmud & Lee, 2005; McLure Wasko & Faraj, 2000; McDermott & O'dell, 2001).

The characteristics of CoPs are similar to an organization in terms of value creation and culture, and therefore CoPs could be considered as a small organization. Organizations create CoPs with managed membership, selecting the right person in terms of skills is easier but however the challenge lies with the selection of right personality. Selecting knowledge workers based on personality traits can prove to be effective but little research has been done in identifying the right personality.

This study aims at identifying potential knowledge workers based on personality traits for CoPs using four strategic alternatives. Five-Factor Model from Psychology has been proven as an effective framework in defining the personality traits of individuals and therefore the personality traits as defined by Five Factor Model is used in this research. Figure 4 shows the layout of the framework used in our study.

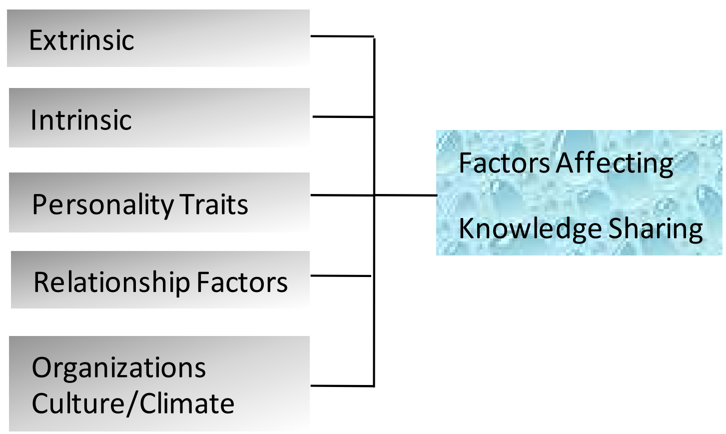

Figure 3: Factors Affecting Knowledge Sharing

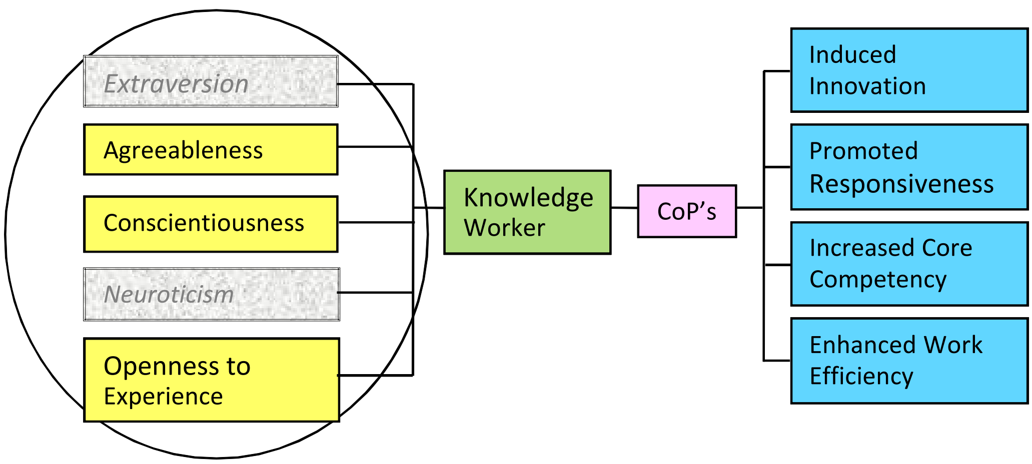

Figure 4: Knowledge Workers and CoPs Fit

III. Knowledge Sharing Measures

In order to validate the hypothesis proposed by this research, several measures are taken into consideration. For example, Cabrera (2006) mainly concentrated on the personality traits, organizational environment and system in relation to knowledge sharing. Personality traits were measured using Five Factor Model and was further applied by Kurt (2008) focusing mainly on personality traits. Zhao (2008) studied the effect of personality traits on individualism and collective behavior. Several other studies which involve personality traits in a team setting have been used for this analysis. Neuman (1999) studied the team performance with respect to Five Factor Model personality traits. A similar study was done by Morgeson (2005) relating the personality traits with task performance. Neihoff (2006) addressed the personality traits of mentors and the participants are members of medical association, this study was considered due to its similarity with Core Competency CoPs. A total of several measures used in this analysis as shown in Table 1.

The analysis of the studies by Cabrera (2006) and Neihoff (2006) indicated that in both the cases Openness to Experience is highly correlated to knowledge sharing and also the values in both these cases is very close 0.22

in the case of Canbrera, 2000 study and 0.25 in the case of Neihoff, 2006 study but however unlike Cabrera, 2006 the study by Neihoff, 2006 indicates high level of correlation between extroversion and mentoring. Kurt (2008) indicated a high level of correlation between Extroversion, Agreeableness, Conscientiousness and knowledge sharing. These studies are based on individuals, while the studies by Morgeson (2005) and Barrick (2005) indicates that the performance in a team setting is highly correlated with Conscientiousness and Extraversion. These investigations can verify the 5 hypotheses which validate the positive assumptions.

TABLE 1:
MEASURES OF KNOWLEDGE SHARING

Authors and Model	Emphasis On	Identified
(Cabrera et al. 2006) **Social Dilemma**	Knowledge Sharing	Rewards, sense of group identity ,responsibility
(Zmud & Lee, 2005) **Theory of Reasoned Action**	Motivators of Knowledge Sharing Extrinsic Rewards Reciprocal relationship Sense of Self-worth Sociological	Extrinsic Rewards (negatively) Reciprocal Relationship (Positive) Organization Climate (Positive)
(Bartol & Srivastava, 2002)	Knowledge Sharing Motivator Extrinsic Rewards	Team based rewards will motivate Companywide rewards will motive knowledge sharing across teams
(Kankanhalli et al.)	Motivators to contribute to Electronic Knowledge Repositories Rewards Reciprocity Knowledge Self Efficacy Enjoyment in helping others Pro-Sharing Norms Degree of usage of the repository	Self-Efficacy, Enjoyment in helping others motivates knowledge sharing
(Todd et al.) **Big Five Model**	Agreeableness	Positive effect on knowledge sharing
(Namjae et al., 2007) **Big Five Model**	Motivators of Knowledge Sharing Agreeableness Conscientiousness Expertise Extrinsic Motivation Intrinsic Motivation	Agreeableness does not affect knowledge sharing Expertise has positive effect on knowledge sharing intention
(Politis, 2003)	Effect of Trust on Knowledge Sharing	Trust has positive effect on knowledge sharing
(Levin et al., 2002)	Competence bases trust	Competence bases trust has a positive effect on knowledge sharing
(Levin et al., 2004)	Competence Based Trust Benevolence Based Trust	Competence and Benevolence mediates trust and knowledge sharing
(McLure Wasko & Faraj, 2000)	Tangible Returns Intangible Returns Community interests	Desire to Share for the benefit of the community has positive effect on knowledge sharing Tangible benefits does not affect knowledge sharing
(Kurt et al., 2008) **Big Five Model**	Agreeableness Conscientiousness Openness to experience	All three has positive effect on knowledge sharing
(Cabrera et al., 2006) **Big Five Model**	Agreeableness Conscientiousness Openness to experience Organizational Commitment Self-efficacy Job autonomy Rewards	Openness to experience and Self-efficacy has positive effect on knowledge sharing

IV. CoPs-Centred Knowledge Hub

In this section, we describe the architectural model that embodies CoPs-Centred knowledge hub. The Knowledge Hub's full architectural model is structured in five layers as shown in Figure 5.

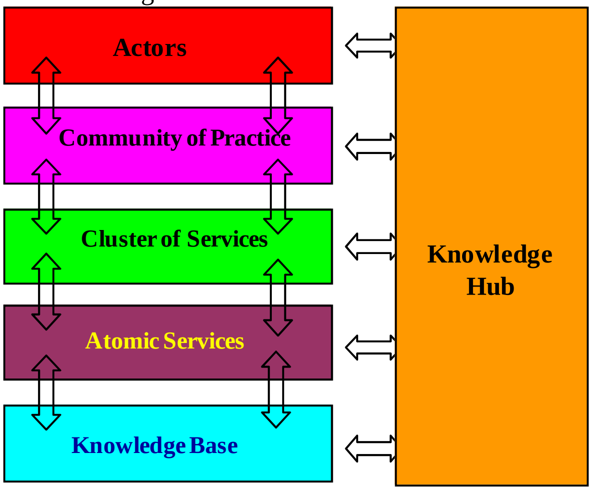

Figure 5.Knowledge Hub Architectural Model Structured in Five Layers

The Knowledge Hub (KH) Headquarters can be seen as a sixth cross-functional layer (Passiante, Elia, and Massari, 2000), made up of all individuals, organizations and institutions that are responsible for co-ordination of the Knowledge Hub. The headquarters main task is to configure and monitor dynamically the five layers' structure. The aim of our logical architecture is stimulating and supporting all actors involved in the local/regional innovation strategy, helping them to self-organize in a community of practice.

A. *Knowledge Hub's Actors*

The actors that interact with the Knowledge Hub belong to the following communities:

- Local and regional institutions, directly involved in planning and carrying out territorial growth and innovation projects;
- Local entrepreneurs and trade associations, representing the economical resource of a territory;
- Citizens and government officials, directly or indirectly involved in the local growth;
- Corporate headquarters and enterprises attracted by new favorable environmental conditions and potentially interested in investing in the territory;
- Public and private research centers, representing the main source of innovation.

B. *Cluster of Services*

The Knowledge Hub is aimed at empowering all above categories of users and amplifying the network of existing relations among the typologies of actors listed in previous section. This purpose is achieved by increasing the frequency and effectiveness of their learning and knowledge sharing processes, through the organization of a front office area composed by dynamically configurable clusters of services. In this way, the Knowledge Hub is able to present a different, tailored set of atomic services to each community of practice, satisfying their needs and enhancing their potentialities.

The cluster of services for each community of practice is defined according to three fundamental guidelines: the objectives of each Community of practices, its needs and the perspectives and the results expected by the Knowledge Hub Headquarters. All Knowledge Hub services feed into and are fed by the contents of the knowledge base.

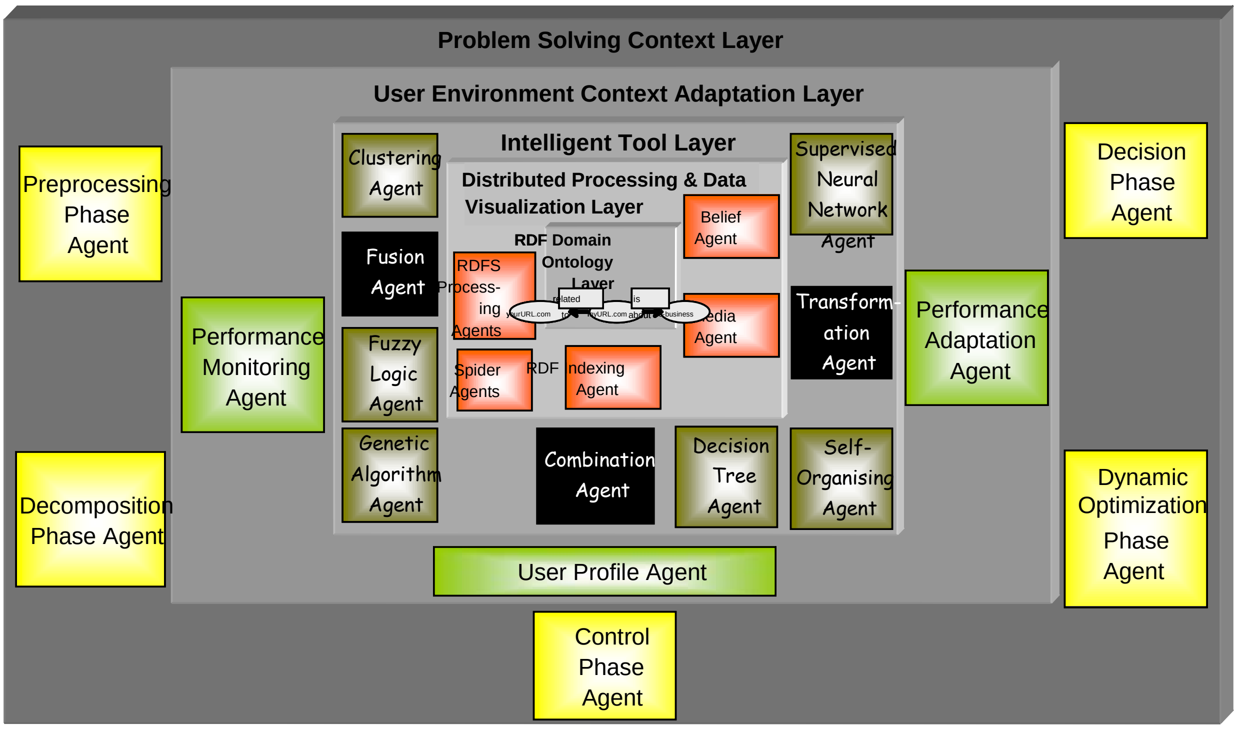

Figure 6.CoPs-Centred Knowledge Sharing IT architecture

C. Technological Architecture of the Knowledge Hub

The technological architecture is structured in two main areas, namely the front-office and back-office areas.

In Figure 6 we outline the IT architecture approach for constructing knowledge management systems. The front-office area is organized as a Web-based portal and functionally corresponds to the *Belief Agent* in the distributed processing layer of the IT architecture in Figure 6. It represents the interface to the system through which the Knowledge Hub actors' beliefs are checked, imported into the system and converted into knowledge to be semi-automatically associated with concepts maintained by the RDF agents in the distributed processing layer of the IT architecture. The decision support, optimization and intelligent tool and data mining agent layers of IT architecture also provide added functionality to the user in the front-office area.

The data layer is the lowest layer of the IT architecture. It is shown as the RDF Description layer. The ontology of the data layer is aimed at exploiting modular business ontologies for knowledge sharing and decision support.

The ontology of the data layer of the IT architecture is expressed using standard, XML-based *Resource Definition Format Schema* (RDFS) metadata syntax (Brickley and Guha, 2000). The IT architecture is instantiated using a RDFS indexing agent to represent the common ontology (i.e., the shared hierarchy of concepts) underlying shared knowledge.

D. Resource Description Format (RDF) for Knowledge Representation

The Resource Description Framework (RDF) is a special-purpose XML Schema, specifically oriented to knowledge representation (Lassila and Swick, 1999). The RDF specification defines the concepts of *resources*, *properties* and *statements*. A statement represents a named relation between two resources, or between a resource and a value. The name of the relation is called a *property*.

RDF offers a flexible, standardized way to write down generic metadata. For example, you can define that the resource myURI.com is about "e-business" and that it is related to yourURI.com. An easy way to represent this data is by drawing a graph of it as shown in Figure 7.

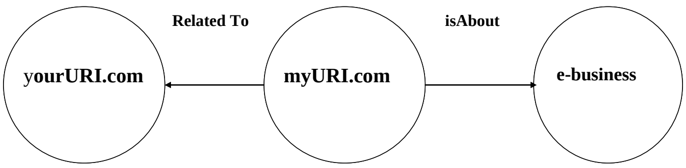

Figure 7.A RDF Statement Represented as a Graph

For RDF metadata to be exchangeable, we need to define common names for it. The RDF data model provides neither a mechanism for describing properties, nor a technique for describing relationships between these properties and concepts. So RDF is not, in itself, a language for ontology design.

Rather, that is the role of the RDF Schema (RDFS) language (Brickley and Guha, 2000). RDFS language allows for defining classes and properties, which can then be used in RDF assertions about resources or about other classes. With RDF Schema, we can create a schema (corresponding to business ontology) that defines a language to use in our RDF metadata. In the business ontology we can define the properties that we need for the particular domain that we're working on. In our case, properties are concepts needed in describing web pages that contain useful information for corporations and individuals taking decisions involving business innovation.

In other words, RDF Schema offers us the ability to define specific classes of resources (e.g. 'documents') and subclasses of these classes (e.g. 'web pages'). Furthermore, we can add domain constraints and range-constraints on properties, demanding that the resource to which the property is applied and the value of the property must be of a specific class.

The main services offered through the portal include a discussion forum, mailing list, chat and teleconference facilities, e-learning support, on-line questionnaires, a document management system and a publishing system (for news and editorial content) and intelligent decision support.

The Knowledge Hub back office is centered on the content management system that is the heart of the whole system and exploits the network of concepts maintained by the RDF agents in Figure 6.

Each of the services composing the Knowledge Hub continuously generates new knowledge, both directly (as the forum, the chat and the publishing system do) and indirectly.

The latter type of knowledge generation may occur is several ways, e.g. suggesting to the Knowledge Hub Headquarters new knowledge sources useful to solve specific problems or new discussion topics inside the different communities of practices. The next section presents the main characteristics of our content management system.

E. Knowledge Hub's Content Management System

The architecture of the Knowledge Hub's content management system is composed of a knowledge base and a set of IT architecture based agents that implement the distributed processing layer of Figure 6. Such agents are employed for knowledge processing, i.e. for gathering, selecting, annotating and indexing documents, according to a chosen ontology. Moreover, there are a navigator for searching and retrieving documents (e.g., the RDFS processing agents in Figure 6 can be used as mobile agents for retrieving and fetching information), and an onto-maker module for codifying ontology domains into a machine-readable language. Now, we briefly illustrate the main characteristics of the knowledge hub's processing agents and, in particular, of the indexing engine.

F. Spider and Validator Agents

The spider agent shown in Figure 6 monitors the web, in order to find new knowledge items to be inserted in the knowledge base. The Knowledge Hub Headquarters members configure the spider using a web-configuration facility.

The validator agent allows adding notes and comments, keeping them separate from the rest of the document. In this way, each member of a community of practice can visualize both the notes and their authors, individuating immediately the core part of a document.

G. Indexing Agent

The indexing agent shown in Figure 6 creates the link between documents and knowledge base. It allows associating to a document some concepts or semantic assertions, structured as subject-predicate-object sentences. The indexing agent is able to interpret the syntax used to express the ontology (in our case, the RDFS language), representing it as a tree-structure, according to the selected browsing relation.

H. Decision Support and Navigation Agents

The decision support agent acts as a semantic-aware data warehouse, extracting knowledge following conceptual links (namely, the speaks-about link) and in the application-specific ones (including the standard is a and part-of one).

Finally, the navigator represents the navigational interface of the knowledge base with the end-users. It allows selecting the documents not only through usual text retrieval techniques, but also through semantic search and semantic navigation.

I. Problem Solving Ontology Layer

This layer represents a task level constructs employed by a knowledge worker for problem solving involving problems which require explicit and tacit (subjective, judgmental) knowledge (Khosla et. al. 2004a and b). The problem solving ontology (task) agent layer defines the constructs related to the problem solving agents, namely, preprocessing, decomposition, control, decision and post-processing. The definition of tasks related to the problem solving agents is shown in Table 2.

This layer systematizes and modeling practitioners/stakeholder/user's tasks in the domain under study. It also helps to model practitioner's or knowledge worker's problem solving approach and tasks in domains which are complex and data intensive. The research on problem solving ontologies or knowledge-use level architectures has largely been done in artificial intelligence. This layer employs the services of the other 4 layers for accomplishing various tasks.

TABLE 2.
SOME GOALS AND TASKS OF PROBLEM SOLVING AGENTS

Phase	Goal	Some Tasks
Preprocessing	Improve data quality	Noise Filtering Input Conditioning
Decomposition	Restrict the context of the input from the environment at the global level. By defining a set of orthogonal concepts Reduce the complexity and enhance overall reliability of the computer-based artifact	Define orthogonal concepts
Control	Determine decision selection knowledge constructs within an orthogonal concept for the problem under study.	Define decision level concepts with in each orthogonal concept as identified by users Determine Conflict Resolution rules between decision level constructs
Decision	Provide decision instance results in a user defined decision concept.	Define decision instances of interest to the user
Post-processing	Establish outcomes as desired outcomes	Concept validation Decision instance result validation

J. Optimization Layer

The optimization agent layer defines constructs for fusion, combination and transformation technologies which are used for optimizing the quality of solution (e.g., accuracy). In this section we discuss the definition of the optimization agents.

The four most commonly used intelligent technologies are symbolic knowledge based systems (e.g. expert systems artificial neural networks, fuzzy systems and genetic algorithms). The computational and practical issues associated with intelligent technologies have led researchers to start hybridizing various technologies in order to overcome their limitations (Khosla et.al. 2004a and b). However, the evolution of hybrid systems is not only an outcome of the practical problems encountered by these intelligent methodologies but is also an outcome of deliberative, fuzzy, reactive, self-organizing and evolutionary aspects of the human information processing system .

These hybrid configurations can be grouped into three classes, namely, fusion systems, transformation systems, combination systems (Khosla et.al. 2004a and b). These classes along with individual technologies are shown in Figure 8 along two dimensions, namely, quality of solution and range of tasks.

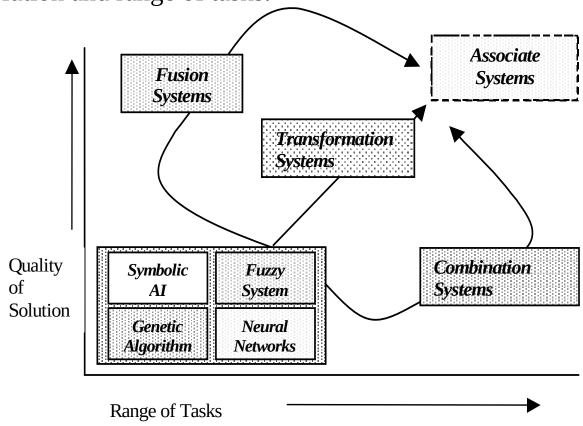

Figure 8.Technologies, Hybrid Configurations, Quality of Solution and Range of Tasks

In fusion systems, the representation and/or information processing features of in technology A are fused into the representation structure of another technology B. From a practical viewpoint, this augmentation can be seen as a way by which a technology addresses its weaknesses and exploits its existing strengths to solve a particular real-world problem.

Transformation systems are used to transform one form of representation into another. They are used to alleviate the knowledge acquisition problem. For example, neural nets are used for transforming numerical/continuous data into symbolic rules which can then be used by a symbolic knowledge based system for further processing. Combination system involves explicit hybridization. Instead of fusion, they model the different levels of information processing and intelligence by using technologies that best model a particular level. These systems involve a modular arrangement of two or more technologies to solve real-world problems.

However, these hybrid architectures also suffer from some drawbacks shown in Figure 8. Fusion and transformation architectures on their own do not capture all aspects of human cognition related to problem solving. For example, fusion architectures result in conversion of explicit knowledge into implicit knowledge, and as a result lose on the declarative aspects of problem solving. The transformation architectures with bottom-up strategy get into problems with increasing task complexity. Therefore the quality of solution suffers when there is heavy overlap between variables, where the rules are very complicated, the quality of data is poor, or data is noisy. The combination architectures cover a range of tasks because of their inherent flexibility in terms of selection of two or more technologies. However, because of lack of (or minimal) knowledge transfer among different modules the quality of solution suffers for the very reasons the fusion and transformation architectures are used. It is useful to associate these architectures in a manner so as to maximize the quality as well as range of tasks that can be covered. These classes of systems are called associative systems as shown in Figure 8.

As may be apparent from Figure 8, associative systems consider various technologies and their hybrid configurations as technological primitives that are used to accomplish tasks. The selection of these technological primitives is contingent upon satisfaction of task constraints.

Name:
Parent Agent:
Goals:
Tasks:
Task Constraints:
Pre-condition:
Post-condition:
Communicates With:
Communication Constructs:
Linguistic/non-linguistic Features:
Psychological Scale:
Representing (Perceptual) Dimensions:
External Tools:
Internal Tools
Internal State:
Actions:

Figure 9: Generic Agent Definition

K. *Tool or Technology Layer*

The tool or technology agent layer defines the constructs for various intelligent and soft computing tools. Finally, the five layers facilitate a component based approach for agent based software design. The generic agent definition used for defining the agents in various layers is shown in Figure 9. It includes goals which are a desire or desired outcome or state. Tasks: are goal directed processes in which people consciously or unconsciously engage. Task constraints: are pragmatic constraints imposed by the stakeholders and the environment for successful accomplishment of a task. The task constraints primarily determine the selection knowledge required for selecting a technological artifact Precondition helps us to define underlying assumptions for task accomplishment, Post condition, Defines the level of competence required from the technique or algorithm used for accomplishing the task. The communication constructs employed by the transformation agent. These communication constructs are based on human communicative acts like request, command, inform, broadcast, explain, warn and others. The linguistic and non-linguistic features represent the sensed data from the external environment as well as computed data by the agent. Representing Dimension is the physical or abstract dimension used to represent a feature. It can be seen as capturing the perceptual representation or category of a feature. These representing dimensions can be shape, color, distance, location, etc.

Psychological Scale is the abstract measurement property of the physical or abstract dimension of a represented feature. The *parent agent* construct identifies the generic agents in the four agent layers, whose constructs and services have been inherited by a particular application or domain based transformation agent. The *communication with* construct in Figure 6 identifies all the agents and objects that a transformation agent communicates with in the five layers. The *external tools* construct in Figure 6 refers to those computer-based or other tools that are external to the definition of an agent. On the other hand, *internal tools* are those tools that are defined internally by a transformation agent. The *internal state* construct refers to the beliefs of a transformation agent at a particular instant in time. Finally, the actions construct is used to define the sequence of actions for accomplishing various tasks.

V. Conclusion and Implications

Strategic importance of knowledge has made organizations to identify ways to harness knowledge. Organizations invest resources such as knowledge workers, systems and contents to facilitate knowledge sharing. Organizations for years have concentrated on codifying the explicit knowledge leaving behind the tacit knowledge. The importance of tacit knowledge has given Communities of Practice (CoPs) a strategic importance. The strategic importance of CoPs makes it important for communities to be aligned to organization's business strategy and performance. Studies on aligning CoPs strategy with knowledge strategy or organizations business strategy is limited but however some study argues that the alignment should be bottom up, i.e. the knowledge work should be aligned to organization objectives.

CoPs which involve knowledge workers are an effective entity for creating knowledge and innovation. However, given that knowledge and know-how is employed by organizations for competitive advantage it is important, knowledge and CoPs are underpinned in business strategy and organizational performance in an organization firstly. Secondly, knowledge sharing among knowledge workers is critical to effective functioning of CoPs as otherwise CoPs can easily lose momentum overtime to the detriment of the organization. Knowledge sharing among knowledge workers is influenced by their know-how as well as their knowledge sharing personality traits. Finally, in order to realize the benefits of CoPs, an IT framework or knowledge hub is essential for a progressive and agile organization.

This paper makes a unique contribution in terms of aligning CoPs with business strategy and knowledge sharing traits of knowledge workers and developing a CoPs-centred IT enabled knowledge hub architecture for creation of Cops-centred knowledge banks.

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