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SUPPORTING KNOWLEDGE CREATION: Combining place, community and process

I.T. Hawryszkiewycz
Faculty of Information Technology, University of Technology, Sydney
FAX: +61 2 9514 1807 e-mail:igorh@it.uts.edu.au

ABSTRACT

The paper identifies the three major components of knowledge sharing and creation within enterprises as a combination of place, community and process. The way these are combined will depend on the particular goal and enterprise structure. The paper then claims that computer support systems must provide user driven methods to easily integrate these components to fit in with organizational culture and knowledge goal. It then describes a way to provide this kind of environment.

INTRODUCTION

Knowledge management is now becoming almost a requirement in most enterprises, although in many cases its meaning to the enterprise in a clearly expressed paradigm is not obvious (McAdam, McCreedy, 1999). To many, knowledge management is based on the paradigm of collecting information and making it easily accessible using Intranet technologies and document management software. Many writers (Riggins, 1998) argue that knowledge creation within enterprises must go beyond this simple paradigm. It must include ways to combine the tacit knowledge within the enterprise with explicit knowledge using a process that eventually leads to an identified goal. It must also facilitate such combination towards a goal. Knowledge management must thus be a combination of place, community and process. The place provides the environment where tacit and explicit knowledge, which are combined within the organizational context. The community supports all people with the necessary tacit knowledge, whereas process ensures that their activities are coordinated and supported with necessary tools.

The paper emphasizes business processes that are not predefined but require knowledge creation within the business process steps. The paper refers to such processes as knowledge intensive processes. The paper proposes a way to create places that bring together explicit and tacit knowledge within steps of knowledge intensive processes and describes a system that includes functionality found increasingly necessary in knowledge creation environments. Such functionality calls for easy customization of work places to provide ways for teams to work together within enterprise contexts.

A PARADIGM FOR KNOWLEDGE SHARING

The paper sees knowledge intensive processes as going beyond workflows often found in enterprise processes and emphasizes the idea of place where all objects are brought together and various parts of the business process. This idea is illustrated in Figure 1.

Figure 1 illustrates two ways of modeling a supply chain. The traditional view is seen on the left with suppliers providing parts to producers and their partners and then produce goods going on to the client. This view requires the process as made up

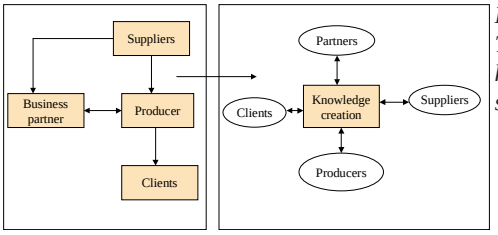

Figure 1 – Towards knowledge sharing

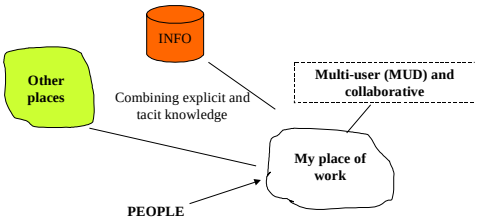

Figure 2 – A place of work

of a number of two-way relationships that make up the supply chain. Any changes will then have to pass through these relationships. The alternate is shown on the right where there is a place for all the participants to come together. Here a change can be raised at the one place with all participants together contributing their tacit knowledge to its solution.

The goal is to go beyond the simple paradigm of seeing computers as places to store and find information but to see them as 'my place of work'. One now departs from the traditional view to a view that contains people as well as documents and supports governance structures and flexible ways of interaction between the people.

The work environment in any enterprise will be made up of many such places connected together and working towards a common goal. Such a connection of places is shown in Figure 3 and makes up a knowledge intensive business process. Thus for example one activity in the process may be market evaluation, while another may be brainstorming for concepts and still a third may be planning of new products. Each such activity has its focus and produces an identified output. Each activity may bring

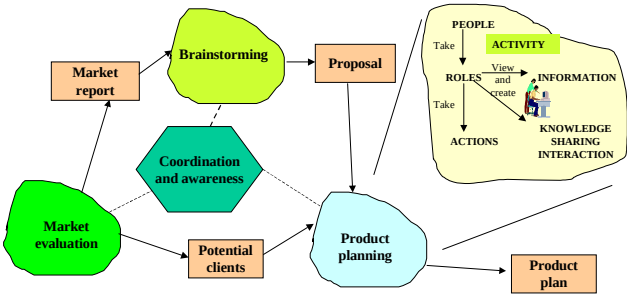

Figure 3 – A network of places

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together people with different expertise. People in the enterprise may also participate in more than one activity.

Such connected places require additional support for workflows to be specified between them as well as maintaining awareness of what is happening in each place.

WHAT MAKES UP A PLACE

Figure 4 shows the most important concepts that make up a place. These center around roles that define responsibilities within the enterprise. Roles are given access to materials and authorized to carry out well-defined actions. People are assigned to the roles and can participate in various discussions to interpret materials and create new objects based on their deliberations. The assignment of responsibilities to the roles is flexible and can be dynamically changed as knowledge evolves.

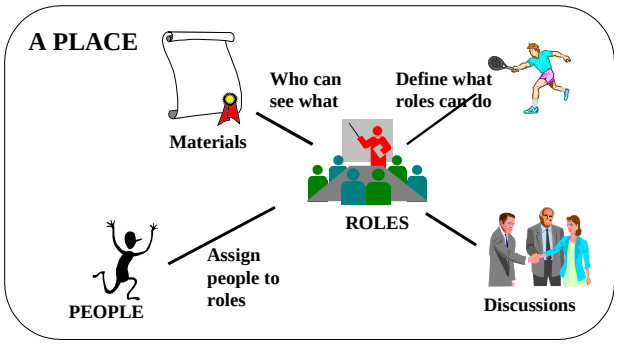

Figure 4 – A place for sharing knowledge

There are a number of additional aspects to most places. These include:

- workflows that define sequences of actions needed to carry out a more complex activity,
- ways to maintain awareness through notification schemes and other features, and
- ability to create independent workgroups within the enterprise.

Furthermore places should be flexible in that responsible roles can restructure the places as work evolves.

Our implementation of such a place is shown in Figure 5. It uses the LiveNet system, which was developed at the University of Technology, Sydney. Figure 5 shows a place for delivering teaching materials but could equally apply to any training or consulting situation that requires the interaction of many people in different roles and with different and varying governance structures. The place shows the main objects shown in Figure 4 accessible through selections on the screen.

Figure 5 – A place for sharing and discussion

Figure 5 also illustrates a number of parameters used to maintain awareness. These include goals, milestones, surprises, new items and terminology.

We have used LiveNet in a variety of learning environments, including:

- A place for distributing and clarifying materials,
- A place for developing ideas through facilitated discussions,
- A place for students to set up their own applications,
- A moderated distance place.

To do this we can use customization features that enable new roles and relationships to be easily created.

Customizing places

The advantage of a flexible system is adaption and customization. There are two levels of customization, namely:

- Restructuring the process through the creation of new places and relationships between the places including creation of new places, and
- Restructuring or creating new places

An example of such restructuring is in creating different learning and teaching environments (Hawryszkiewycz, 2000). Thus there can be standard places that are combined to form new environments through copying and adapting them into places within that environment. The idea is illustrated in Figure 6. Here there are standard places that are combined into an environment that includes tutorials and groupwork that is moderated through a master workspace.

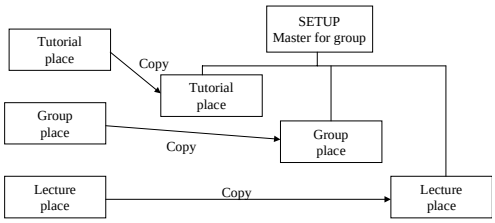

Figure 6 – Creating an Environment

Such environments can be created within a matter of minutes using wizards available in the system.

BUILDING COMMUNITIES

The semantics in our system are to create independent workgroups and organize their work into a number of activities. Each workgroup can pursue any number of activities, where each activity becomes a place with roles defined in ways that correspond to a community of knowing (Boland and Tenkasi, 1995) and can include experts, novices, facilitators and others. Thus the activities in Figure 3 may be the joint responsibility of one workgroup but each activity may be carried out by a subset of people in the workgroup in one place. All the people in the workgroup are continually kept aware of the status of each of the activities and the activities are coordinated to an agreed goal.

The semantics of each workgroup are such that there are designated roles that can create activities and assign people to these activities. Each activity itself may be moderated through the creation of roles with different responsibilities.

PROCESS

What is also needed in knowledge creation environments and ways to interpret information in community settings and form news perspectives (Boland and Tenkasi, 1995) based on such interpretations. These activities have to be integrated into process cycles that combine tacit and explicit knowledge (Nonaka, 1994). Typical business processes that emphasize

knowledge creation include innovation, product planning, evaluation of proposals, responses to bids and so on. A typical empirical innovation process is that defined by Kuczmarski (1997), as a process for innovation that includes a number of groups such as market evaluation group, production group that are combined to evaluate and trial a new product or service. They differ from many place paradigms in that they must support exchange of knowledge from different domains but interpret it in ways needed to develop new products and services to give the enterprise competitive advantage.

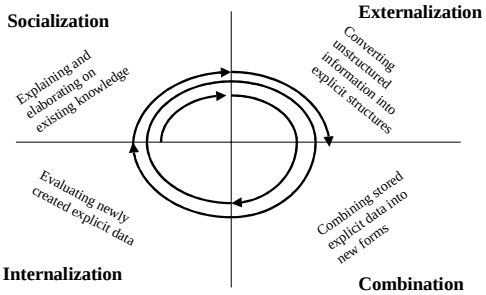

Figure 7 – Nonaka's process

Such processes require ways to capture and combine tacit and explicit knowledge from people, each in a different specialized area (Grant, 1996) often participating as workgroup communities in organizational settings. Increasingly they are carried out in global enterprises where such knowledge must be developed across distance. The knowledge creation processes are dynamic in the sense that they evolve and as new directions are identified or new opportunities arise. Often such processes link a number of workgroup communities. In this paper we call these processes knowledge intensive processes.

Process facilitation

Agents can provide ways to facilitate processes. The agents can select the people and artifacts needed at a process step, create a workspace for them and notify them of this workspace. Figure 8 for example shows the kinds of agents.

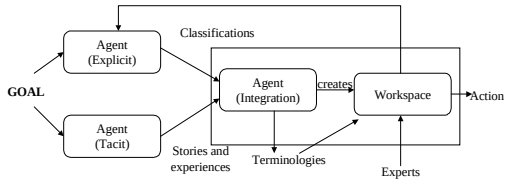

Figure 8 – Agents in the knowledge sharing process

The agents include:

- Search agents for explicit knowledge as well as people with the needed tacit knowledge. These agents will need access to enterprise document repositories and people profiles,
- Agents to manage the tools needed to facilitate the process, such as managing terminologies, and
- Agents that create the workspaces and monitor their progress including notifications when needed.

Our goal here is to develop agents that are general in nature and can be adapted to a variety of places.

SUMMARY

The paper suggested that three components must be included in any system that supports knowledge creation. These are place, community and process. The paper then described a way of creating places that facilitate the creation of moderated communities and illustrated a system, LiveNet, used for this purpose. The paper then outlined ways of integrating processes into such places. The combination of these three is proposed as a way of supporting knowledge creation.

ACKNOWLEDGEMENTS

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