

# THE CONCEPTUALISATION AND ANALYSIS OF A VALUE NETWORK

## *How to Create Value with Inter Organizational Communities of Practice?*

Cláudia Fernandes, Luís Rocha

*Technological Center for the Metal Working Industry – CATIM, Rua dos Plátanos, 197, 4100-414 Porto, Portugal*

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**Abstract:** This paper will discuss how an ongoing experience on collaborative learning in the industry field that aligns with the principles of a community of practice and how technology is used to support the learning and development processes. It is a conceptual analysis that is grounded on theoretical frames and that will provide the audience with opportunities to further reflect on learning communities. The authors present the main results and experiences from the use of knowledge networks. They start by comparing the community with pre-existing models, e.g. “Communities of Practice (CoP)” (Wenger & Snyder, 2000) and “Knowledge networks” (Büchel & Raub, 2002). The work is based on one on-going experience in the industry/services field, directly with Portuguese Technical Commissions (PTC), and it has several outputs such as new norms and directives elaboration, norm projects voting, working papers, norms translation (quality system), etc. There are over 204 persons involved in the 8 PTC managed by Technological Centre for the Metal Working Industry (CATIM) from several different organizations, technological centres, institutes, and universities. The final result is the value creation between the participants that sometimes enables practice rethinking and innovative processes. With the discussion of the experience we aim to contribute to further reflection and analysis of this emerging reality.

## 1 INTRODUCTION

Communities, networks, teams... are some of the names given to groups of individuals working together. CoPs, most likely, were the typical way to learn before the “formal teaching system”. As we look back in history we can find several examples, and ask ourselves if the rupestral pictures weren't less an “art form” and more one visual representation of tacit knowledge required for hunting (Silva, 2005). We can firmly say that CoPs always existed along with ways for representing knowledge and learning practices, and have been of great importance in the social learning process (e.g. the learning of a new profession and/or task). These methods for learning can be viewed along with Schon' “reflective practice” (Schon, 1982) where learning is preformed and accompanied by one master/specialist/monitor in one collaborative setting, and it's done in phases.

The technology' social importance has been seriously acknowledged by practitioners “in most

fields they will consist on geographically separated members, sometimes grouped in small clusters and sometimes working individually. They will be communities not of common location, but of common interest...” (Lickider & Taylor, quoted by Andrade, 2005, p. 11) or even expertise (Dvorak, 2005).

CoP, in our days, is almost like a buzzword. Everyone is asking, “How can I create a CoP?” “How can I implement a CoP?”. In Portugal, and all over the world the teaching and training systems hardly have the capability to respond to organizational demands. Organizations want their co-workers to compete in innovative settings so they can survive shifting in one global economy. Human capital and organizational knowledge are the key words to organizational performance and survivor.

The concept of CoP has been described as “groups of people informally bounded together by shared expertise and passion for a joint enterprise” (Wenger & Snyder, 2000, p. 139). Some principles are suggested to generate dynamics in CoP: trust, collaboration, participation, communication, life

span and leadership. The challenge is in balancing the belongingness and conflicts in emerging or ongoing CoP.

According to some authors this definition neglects the organizational support that networks can benefit from the value that they can contribute to the organization and not only the individuals (Büchel & Raub, 2002).

Based on a study of 16 known organizations, Büchel and Raub (2002, p. 589) proposed knowledge networks of four types according to: networks that primarily focus on individual benefits vs those that focus on organizational benefits; and networks that are self managed vs those that are supported by managers. The proposed networks are:

1. **Hobby Networks** are based on individual interests (e.g. travelling, tennis, etc) and usually do not receive managerial support. Conform to the traditional concept of CoP of Wenger and Snyder.
2. **Professional Networks** extend beyond hobbies by contributing to the building of individual skills base. Like hobby, also professional networks are according the traditional concept of CoP of Wenger and Snyder. Knowledge transfer in these networks is spontaneous and ongoing, a natural by-product of work and mutual support.
3. **Best-practices Networks** are essentially institutional forms of knowledge sharing in organizations, in a multi-directional way, each member and each unit can, in principle, learn from all the others.
4. **Business Opportunities Networks** are business-driven, entrepreneurial networks, which are potentially the most innovative and attractive from a growth and development perspective.

As we have exposed above the importance of CoP and Knowledge Networks is recognized worldwide, but there are several questions (e.g. Chae et al, 2005) around the best way to build them. According to Büchel and Raub (2002) there are four stages for building knowledge networks:

1. **Focusing the knowledge network.** This is a new concept ("Knowledge network") that can be viewed with some suspicion, so it has to be aligned with the organizational strategic priorities, and the bondages are around these same priorities. There is a direct link between the focus of a network and its ability to obtain management support. In this stage links are created to support the network.
2. **Creating the knowledge network context.** In most cases networks form around a parallel structure that exists alongside the more

traditional boundaries of functional departments, product groups, business units, etc. It's very important to choose appropriate communication mechanisms and fostering trust.

3. **Routinizing network activities.** Sometimes there are loosen or non-links between the members of a network, a certain amount of routinization is an important step though effective exchange and continued engagement of the members. In these phase is established the network "heartbeat" and it's also very important to define roles for each one of the members. As in other groups, networks require a set of differentiated roles to be developed over time. Some examples are: network coordinator, network supporter, network editor and network sponsor.
4. **Leveraging network results.** Results are very important to sustain a network, along with knowledge creation and transfer. There is a need to demonstrate to the community outcomes.

## 2 CATIM' KNOWLEDGE NETWORKS

This technological center (CATIM) is a Normalization Sector-based Organism (NSO) since 1987 and adopted a different methodology since 2004. The mission of a technological center is to support the industry development.

This shift in the used methodology was accelerated by a process' evaluation and by an investment in a Learning Management System (LMS) and all the technological and human structure underneath.

First of all, we will define some concepts, and underline our study scope. A Technical Commission (TC) is a group of people with common interests that work on them according to some expected outputs, it's volunteer and non remunerated work. A NSO is an organism that coordinates the work of a TC, it's volunteer and non remunerated work also. The Portuguese Quality Institute (PQI) is the mediating organism between the Portuguese Technical Commissions (PTC) and other countries TC, and also between PTC and NSO. CATIM is a Portuguese NSO and it's a member of some PTC. In this paper we will explore the experience of one technological center - CATIM as a NSO with coordination functions.

This technological center manages 8 TC, there are 13 CATIM' technicians actively evolved in the network (some with participation in several TC) plus 4 with support activities. There are over 210

elements in the several TC (mean of 26 elements for TC). It were created as many networks as active TC. There are, on average, 36 presential meetings/year (data since 1987), this number was severely decreased in 2004 for 21 presential meetings/year.

From 1987 until 2003 the information dissemination was done through letter, fax and e-mail, the contacts where mostly done via telephone, and the voting and idea exchange via fax. That was very laborious and implicated a lot of time, namely in the information photocopying (e.g. some documents with several pages) its expedition to all the participants in the different TC, and also, the gathering and management of all the send/received documentation from PIQ and the TC' members. In these settings there are important economical and organizational issues to take in account (time, human resources, paper, toner, stamps, phones, etc.). Due to this setting evaluation the process started to be mediated by one LMS available in the Internet since the beginning of the year 2004. This LMS is accessible by everyone that is recognized as a TC' member or as a TC' management team member (authentication mechanism). The information is gathered on a specific "room" (specific TC room) in the LMS. Presently, all the tasks and information dissemination are done on-line, eventually there are some information exchange through telephone. The LMS allows document voting and sharing, it has synchronous and asynchronous communication mechanisms, such as chat rooms and discussion forums, and in addition it has also a leisure place where games and thematic discussion rooms are available.

The voting process was simplified because of its mediation by the technology, for example, statistics and tasks to be done are automatically generated and sent to all the TC' members, the work can be done from anywhere with access to the Internet. The LMS allows the process to be confidential and anonymous. This fact is of great importance due to the increasing number of members (in the present over 210) from different locations and of increase of TC managed by CATIM.

With figure 1 we try to illustrate the voting processes over time, we see a rise of the activity from 1996 to 1998 due to support of European structural funds and also because of the natural work cycles as we can see in the frequency curve. In 2004 there was a visible increase in the voting process, this was owed to the internal re-organization of the process, it's mediation through the LMS and also, to the work cycles.

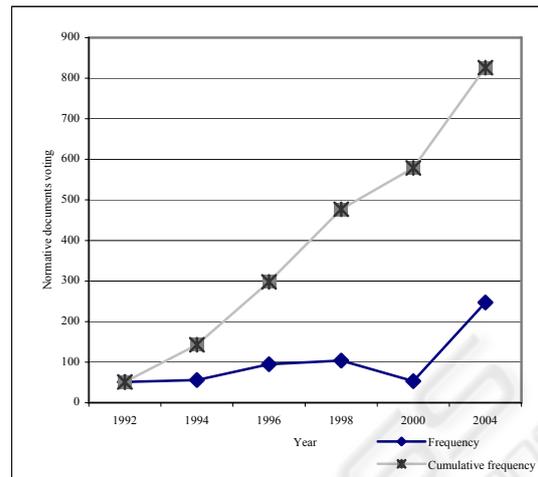


Figure 1: Document voting.

In figure 2 we have the number of finalized documents, as direct outputs from the different PTC and the volunteer work of over 210 persons from different organizations. These documents were sent to PQI and are now used by different organizations (industrial and services), technological centres, universities, and associations, among others, that want to certificate their products and/or services.

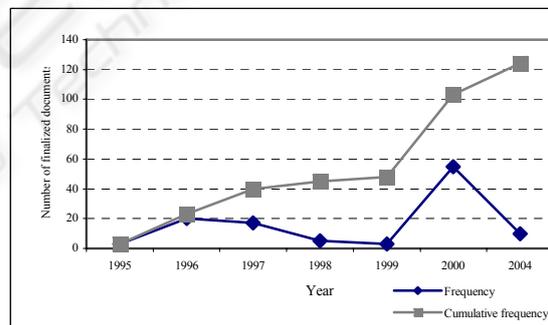


Figure 2: Finalized documents.

The LMS has some available mechanisms not yet used in these communities, such as chats rooms. This is due to the nature of the work carried out, although the exchanging documents' and the voting' areas are widely used.

## 2.1 CATIM' TC Analysis

According to the Büchel and Raub model the TC managed by this technological center, aligns in the "business opportunity" network conceptualization, which goes a little bit further than the traditional Wenger and Snyder' definition of CoP. It's presupposed the "creation of value". In figure 3 we

can see that TC have great managerial support although the individual support and participation are clear to all. The benefit level is clearly organizational, but all the participants have gains in belonging to these networks/communities (TC). They are basically driven by knowledge and opportunity. The members have access to privileged information and start to enlarge the personal and/or organizational contact list, and get to know experts in areas of common interest. The social capital is one of the reasons that make people join a specific network. In our case the LMS enhanced the workflow and made the process easier and cheaper.

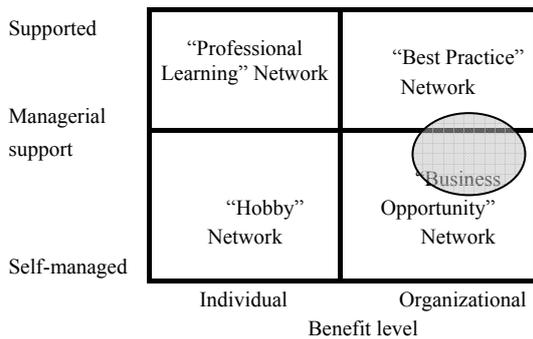


Figure 3: PTC integration according to the "Value Network" model.

The group of individuals in PTC are genuinely interested in creating new products (e.g. working documents, Portuguese norms, working papers) that can create new business opportunities and/or products related to this new knowledge. These outputs don't necessarily fit in existing business models. Unlocking this potential is one of the intangible products of these networks that with time can become tangible. Sometimes, in these settings, rules are broken and new ones created, new processes are created, and this strives the innovative and creative processes.

As several studies (e.g. Karrison et al, 2004; Nerkar & Paruchuri, 2004) point up that most of the knowledge used in the majority of companies is developed externally. We can face this experience as one example for a knowledge source.

### 3 CONCLUSION

The importance of knowledge networks is highly recognized worldwide and in several areas, from leisure to work. But as in other companies worldwide, CATIM is learning with experience and trying to get the best of it. One central concern is how can we produce knowledge and get the best out

of the community? In our opinion, for fostering and developing networks, one of the central issues is to manage the context rather than little details. The focusing on tangible results is one important setting to "get the work done".

Clearly the networks (TC managed by CATIM) converged around knowledge and were based on volunteer work, mainly virtually sustained through an LMS (since 2004).

Its members took a proactive behaviour. Participants used their existing skills and developed new ones with the participation on these groups. Several tangible outputs were achieved. This is clearly the scenario that "1+1=3", the group is different from adding its parts, according to the definition of a business opportunities network.

The used model can be partially replicated when the following conditions are met:

1. The gains in belonging to the network are individual but, mainly organizational;
2. The network has some managerial support;
3. The network is mediated by technology and has technical support;
4. There are tangible results to be achieved (in these particular case, norms, working papers, working documents, norms' translation, discussion and voting, etc.);
5. The members have interest and gains by belonging to the network (contact list, less costs, work optimisation) and have the clear conscience of that;
6. Contextual and economical variables, among many others.

The technology opened new doors and enhanced the learning and participation potential of singular individuals in this mutual learning and production process.

The organization ability to continuously innovate and improve is clearly linked to the capability of developing new skills based on (new or renewed) knowledge. It's the process of capability building it self. And has we know increased efficiency is a precondition to success. Belonging to a knowledge network (or even to a CoP) is a competitive advantage for the global economy.

### REFERENCES

- Andrade, A. (2005). Comunidades de prática – uma perspectiva sistêmica, *Revista Nov@Formação*, Jun(5), 11-14.
- Büchel, B. & Raub, S. (2002). Building knowledge – creating value networks, *European Management Journal*, 20(6), 587-596.

- Chae, B; Koch, H; Pardice, D. & Huy, V. (2005). Exploring knowledge management using network theories: questions, paradoxes and prospects, *Journal of Computer Information Systems*, 45(4), 62-74.
- Dvorak, P. (2005). Coping with the coming brain drain, *Machine Design*, July(42), 36-42.
- Karisson, C.; Flensburg, P. & Horte, S. (2004)(Eds) *Knowledge Spillovers and Knowledge Management*, 1<sup>st</sup> Edition, London: Edward Elgar Publishing.
- Nerkar, A. & Paruchuri, S. (2004) Evolution of R&D capabilities: the role of networks within a firm, *Management Science*, 51(5), 771-785.
- Schon, D. (1982). *The Reflective Practitioner – How Professionals Think in Action*, New York: Basic Books.
- Silva, A. (2005). Aprender através de comunidades de prática, *Revista Nov@Formação*, Jun(5), 15-17.
- Wenger, E. & Snyder, W. (2000). Communities of practice: the organizational frontier, *Harvard Business Review*, Jan-Fev, 139-145.



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