

ANALYZING INTERACTIONS IN A HEALTHCARE NETWORK: FIRST STEP FOR THE DESIGN OF A FLEXIBLE INFORMATION SYSTEM

Bénard, Valérie, Lewkowicz, Myriam, Zacklad, Manuel, ICD - FRE CNRS 2848 – Université de Technologie de Troyes, BP 2060, 10010 Troyes Cedex, France.¹

Abstract

Healthcare network is an emergent organization mode which we were able to observe via RPM (“Réseau Pôle Mémoire” in French, which means memory pole network), dedicated to the medico-psycho-social coverage of people suffering from memory confusions. We define this collective as a community of action and we describe its functioning in order to suggest computer features allowing to support cooperative work between the professionals engaged in this network. In this article, we first position our work towards other researches on computer-supported medical activities. Then, we present RPM and suggest an analysis framework. We expose our first results after one year of observation, and we finally suggest improvements of the design of the cooperative information system.

Keywords: healthcare network, activity analysis, CSCW, community of action

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1 INTRODUCTION

Health care and the way it is distributed have evolved in the last decade. Indeed, as Alpay et al (2004) underline, the patient is more and more involved in the care process, wondering and wishing more information about the pathology which he is concerned by, and about the existing care. Furthermore, according to Bardram (1998), the increasing specialization of the medical disciplines implies more and more distribution of the care. Coordination and cooperation become then more and more critical, but however necessary, to answer the different needs of a patient. Besides, the ageing of the population implies a more and more frequent comorbidity for the old persons (comorbidity is the multiplicity of health problems for the same patient). As Alpay et al (2004) point it out, this established fact implies a multidisciplinary and shared approach of care.

One of the innovative organization modes suggested to face this reality, and which tends to extend in health is the *healthcare network*. Often centered on one pathology, its objective is a global coverage of patients. A healthcare network is constituted of a set of professionals concerned by the pathology, who decide how they work together, as members of such a collective. Our research concerns the computer support for healthcare networks. Thus, we wish to understand how members work together, in order to be able to define relevant features to support their cooperative activities. A study of one year and a half allows us to conclude that a large part of their cooperative work takes place during meetings. So we analyse the interactions taking place during these meetings in order to define the cooperative activities which can be computer-assisted outside the meetings.

In this article, we firstly describe existing works which suggest fruitful ways concerning the computer support of healthcare networks. Then, we present the healthcare network we observed, which is named RPM. In a third part, we show why this type of collective can be qualified as a “community of action” and we suggest a theoretical framework to analyze the RPM activities. Lastly, we present the results of our analysis after one year of observation.

2 RELATED WORK

Several analyses of activities in a healthcare network setting have been published, which help to understand occupational situations involving professionals with various competences. For instance, Bossen (2002) has developed an analytical framework based on seven parameters forming a “common information space”. Wolf et al (1997) have defined a procedure which consists in answering eight questions, to guide the analysis and to show up possible interactions with other tasks. Four other questions can be used in which individual work is viewed as being integrated into a collective process. However, these analytical frameworks focus on existing situations. In the case of the RPM network, these cooperative situations do not exist for the moment, because the network is in the preliminary phase, where the rules are still being defined by its members.

Concerning the involvement of the final users, we agree with Ruppel et al (2000), who suggest that strong involving the end users makes for a better-quality final application, and better acceptance, particularly in the case of collaborative systems. In fact, the RPM members already participate actively in the definition of their Information System by explaining their needs and expectations. Our own contribution is restricted to giving advice and technical support. The RPM members will have to manage on their own the implementation of the system in collaboration with the firm developing the software program.

Another key point about cooperation and coordination between distributed professionals is knowledge sharing. Kindberg et al (1999) suggest distinguishing between several types of knowledge: data, domain (specific vocabulary and particular competence), other people (their knowledge, their competences, their needs). The professionals in the RPM network want to share the data they have on

their patients, and to exchange specialized knowledge, mainly by referring to specialists to improve their practice. They try to continue learning from others by inquiring about their profession and their tasks. They therefore know what to expect of their colleagues and who possesses the information they need to be able to deal with their patients. Kindberg et al (1999) have also insisted on the value of knowledge, which can vary depending on the moment, or the professional involved. The effort required obtaining or transferring knowledge can be measured, and decisions can be made accordingly.

As far as the technologies used by health professionals are concerned, we have observed that many of them, whether they are private or hospital practitioners, use electronic files individually to record information about their patients. For the moment, apart from some hospitals where research activities are conducted, most of the files which are used collectively are paper based. This was pointed out in a paper (Bringay et al, 2004) where the authors explain that hospital professionals use many collective paper documents. In order to improve this practice, these authors suggested introducing a documentary approach, and were particularly interested in developing means of annotating the electronic patient files. Several tools have been developed with a view to meeting the need for professionals to work on cooperative lines on each patient's case. Kindberg et al (1999) have suggested implementing a "timeline view" giving good visibility as to who does what, and when. We intend to integrate this feature into the future RPM system. Bardram (1998) proposed a tool called the "patient scheduler", consisting of four modules, each associated with one kind of cooperative activity: (1) an organizational module, (2) a module handling communications, (3) a module handling planning and scheduling, and (4) a sharing module. Calde et al (2002) suggested producing a tool centered on roles, where each role corresponds to a personalized module based on a filter on the patient's data. This seems to be an interesting approach; we have already analyzed the various profiles occurring in the network, and we could possibly design interfaces dedicated to each profile.

Finally, the issue of supporting interactions has been discussed by Hardstone et al (2004). These authors mention that numerous informal discussions take place between health professionals and that they constitute necessary steps towards caring for patients and organizing the caring process.

3 CASE DESCRIPTION: RPM NETWORK

The term "Healthcare network" involves being "centered on populations, on the scale of a district or of a city. These networks developed at the same time a medico-psycho-social coverage of people, and a public health or community health activity. They associate the local public utilities, health professionals and associations in projects of diagnosis, prevention, and training. They are generally not-for-profit associations"². The ageing of the population in industrial countries, the failure to detect cognitive disorders in the early stages, and the wish to treat these pathologies in a cooperative way involving different professions were the main reasons for creating this network. The main objective of RPM is to improve the medico-psycho-social coverage of people suffering from memory disorders. Its members are now negotiating with URCAM (Union Régionale des Caisses d'Assurance Maladie in French, which means Regional Union of Health Insurance Funds) to obtain funds for the network. Other initiatives have also been launched to find money to help the network.

RPM is a non-for-profit association composed of 190 members who are all health professionals interested in setting up the network. According to the statutes of this association, "including mainly private health professionals, as well as hospital workers and other actors in the medical and social fields the objective of the association is to promote and carry out all activities such as prevention, care, services, training and research for the benefit of elderly people suffering from cognitive disorders inhabiting Troyes and the surrounding area" (translated from the French statutes). The specialties of

² CNR (Commission Nationale des Réseaux in french, which means National Networks Commission) - <http://www.cnr.asso.fr/presentationCnr/presentation.htm>

these 190 health professionals were as follows: 4 Neurologists, 3 Psychiatrists, 12 Gerontologists, 98 General practitioners, 20 Speech therapists, 13 Psychologists, 2 Nurses, 1 Auxiliary, 10 Institutional representatives, 4 Users representatives, 23 Others (social centers, mutual insurance company, local information and coordination center representatives). One of the main roles in the network is that of the coordinator: the present coordinator is a neuropsychologist who plays her own professional role as well as role of coordinator, which consists in supervising the patients' follow-up.

The objective of improving the medico-psycho-social coverage of people suffering from memory disorders can be defined more specifically as follows:

- First, the network members want to reduce the time taken to reach a diagnosis in order to be able to act fast and thus to slow down the progression of the disease as early as possible; this point is particularly critical in the case of Alzheimer's disease.
- The network plans to provide complete coverage of patients, so that they can benefit from full medico-psycho-social assistance.
- Finally, the assistance of those close to the patient is very important in mental diseases of this kind, and the network also wishes to help families having to cope with the problems involved when these pathologies occur in their midst.
- Training is another network commitment because health professionals must be able to update their knowledge and improve their practices.

One of the more implicit but necessary objectives for the successful functioning of the network is to abolish all hierarchical barriers between the various members. Efficient communication and cooperation between members will only be possible if everyone is listened to in the same way, whatever their skills and their role in dealing with patients.

In activity theory terms ((Kuutti, 1995), (Engeström, 1999)), RPM can be depicted as in figure 1.

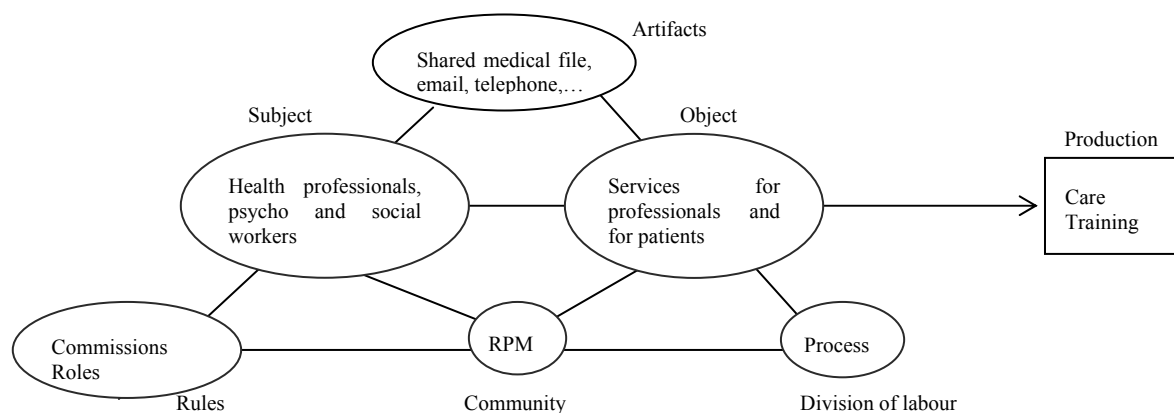


Figure 1. The activity system for RPM

Activity Theory framework clearly defines the various concepts mobilized by the RPM network. However, although this theory provides a general analytical framework, none of the underlying models can be used to perform a close analysis focusing on the interactions between members, which are “sense -creative” within a collective. We therefore now propose a more fine-grained theoretical framework.

4 PROBLEMATICS AND THEORETICAL FRAMEWORK

4.1 Healthcare network, a community of action

Zacklad (2003) defines communities of action as “small groups which actively and thus to some extent rationally pursue explicit goals while relying on a tightly woven fabric of relationships to promote mutual sympathy and the mimetic learning that is assumed to characterize primary groups and communities of practice” (Zacklad, 2003, p. 192-193). Community of action concept includes the notion of federative and cooperative project and common objective. RPM seems to correspond to this definition; indeed, its members are united in a common and previously defined objective.

Zacklad (2003) indicates also that the building of a community of action aims at performing two types of purposes in a simultaneous way: (1) transformation of an external situation answering economic or militant logics, and (2) building of an internal social environment which allows future members to develop mutual knowledge and identities by benefiting from a mutual sympathy which is not excluding confrontations but which is regulating them. To reach these purposes, actors interact by means of transactions, which are creative interactions at the end of which a new production is made (Zacklad, 2003). These transactions permit to reach the two kind purposes of the community. For the first purpose, transactions can concern sharing patient data by the way of an artefact: a shared patient file. They can correspond to conversations concerning the network objective and its meaning, like “what is the care and the coverage of a person suffering from confusions of the memory?” within RPM. For the second purpose, transactions can imply discussions aiming at defining work processes, or transactions can correspond to socio-relational conversations, which allow, both a better understanding of others and creation of a collective identity.

These transactions are described in the theory of symbolic communicational transactions (Zacklad, 2003) which we are now going to present.

4.2 The theoretical framework: Theory of Symbolic Communicational Transactions

Symbolic Communicational Transactions have been defined by Zacklad (2005-b) as “interactions between actors cognitively interdependent allowing them to create new meanings to reduce their mutual uncertainty in their activity management. Creating meaning consists in sharing knowledge to develop representations, attitudes or affects which the value is cemented by a mutual grip of commitment” (translated from Zacklad, 2005-b). Creating new meanings is a major step in RPM. The exchanges between its members allow each of them to become aware of various aspects of the pathologies in question. They can then develop common or shared representations. In addition, the actors have to define cooperative practices, which are not yet existent because the network is still in the early stages. We have classified interactions between RPM members as Symbolic Communicational Transactions.

Symbolic communicational transactions become effective in the context of transactional situations, which are made of different constituents. We describe them towards an example in the RPM context in figure 2.

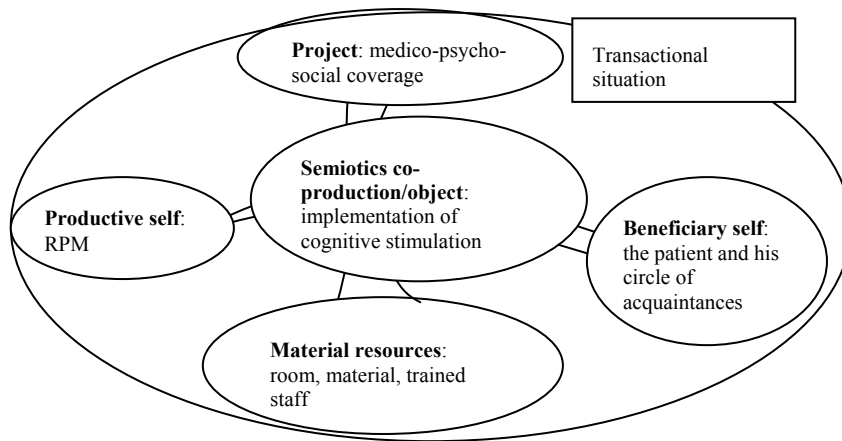


Figure 2. RPM transactional situation applied to implementation of cognitive stimulation.

According to Dewey et al (1949), transactions, which differ from interactions, characterize creative meetings at the end of which a new production is achieved and each actor has been transformed (in other words, interactions do not lead to original production or the transformation of the actors). In the present study, we will not use “interactions” with this particular connotation because this does not fit the meaning of symbolic interactionism, for example. We will use the term “interactions” to denote behaviour associated with the exchanges which take place at meetings without the creative suggestions.

Moving away from this terminology, we now oppose routine transactions and creative transactions. Unlike the production of routine transactions, which is largely standardized, creative transactions involve the production of both an original (semiotic or material) “work” and “selves” (Figure 1 in Zacklad 2005-a). Selves can be either individual or collective, and the producers of transactions can be either different people or the same person engaged in an internal dialogue³. Symbolic Communicational Transactions become effective in the context of transactional situations, which are made up of different constituents, as described in the RPM context by the example shown in figure 2.

Following Zacklad (2003), we consider that the setting of communities of action is a necessary condition for innovation. Creativity within this collective can be observed thanks to the capacity of the collective to quickly change from a regulation mode to another one. These regulation modes can be characterized depending on the focus of the transactions (work or self), and according to the reflexiveness degree of the transactions (introspective or extrospective) (table1). The extrospective degree of reflexiveness concerns quite concrete realizations, for example, the way people get organized to work together. The introspective degree could concern the ethics and the interest in working together.

³ Dialogue is here largely considered. Indeed, preparing oneself a good meal is a transaction too.

	INTROSPECTIVE Socio - Relational	EXTROSPECTIVE Politico - Organizational
SELF	Regulation centered on the explicitation of the conditions of relations' development between productive self(s) and beneficiary self(s) in the structural and personal dimensions	Regulation centered on the explicitation of the relations between (productive and beneficiary) selfs towards the collective functioning allowing the semiotic production
WORK	Regulation centered on the conditions of realization of the semiotic production from the points of view of the explicitation of the common necessary representational basis, required instruments, and functioning rules	Regulation centered on the explicitation of measure criteria for the evaluation of the semiotic production

Table 1. Four regulation modes - SEPI matrix (new version of OSIR matrix (Zacklad, 2003))

Table 1 suggests that we could define the information management functions corresponding to each mode of regulation. Analyzing the interactions between RPM members in the framework of these modes of regulation will therefore make it possible to identify more quickly the functions of a tool supporting RPM activities. In designing an Information System for a healthcare network, it is necessary to fulfill at the same time needs related to each of the modes of regulation, and needs in terms of flexibility, so that the members of the network quickly and easily reconfigure their workspace according to the current mode of regulation. Taking all possible types of transactions types into account in Information System design makes it possible not to neglect conversations which are not directly connected to the task in hand.

The Theory of Symbolic Communicational Transactions is an analytical framework which can be used to define and identify the various interactions occurring in the RPM Network. This analysis includes the conversations which constitute the main observable cooperative activity of the network. It is now proposed to present the RPM analysis.

5 RPM ANALYSIS

We conducted a study following the method of participant observation. In addition, we contributed considerably to setting up the network by being present at the actors' side when they needed support, especially computer support. Furthermore, we actively participated in the IT commission by proposing a method enabling the participants to specify their needs exactly. In this way, although we joined the network simply as observers, we were also involved in designing the Information System in order to support their cooperative work. However, this was rather a difficult position, because we are not the usual actors: only health professionals or social professionals normally take part in the network.

The aims of the network, as well as the way it works, are defined by its members at meetings of various kinds:

- "Staff" meetings, which are attended by fifteen people or so on average, give participants an opportunity of presenting complex cases. Depending on their specialties, the other participants ask questions and suggest solutions or give advice about care and patient coverage. The composition of the staff can change at each meeting.
- Commission meetings:

- The practical commission, which includes fourteen people, meets once a month. This commission is attempting to define good practices so that professionals can refer to specific documents and act accordingly. These practices can evolve with time and experience.
- The assessment commission consists of four people responsible for defining quantitative and qualitative assessment criteria, as well as procedures for collecting the information needed for assessments. This commission has not yet met.
- The IT commission, which meets once a month, consists of six people. It is responsible for drafting the functional specifications of the Information System. The requirements are determined via the patient route.

Whatever the agenda of these meetings may be, the aims of the network, its role and its limitations are also often discussed.

Members of the RPM also meet each other at training sessions. For example, twenty-seven participants are taking part in a scheme to train speech therapists and psychologists to use methods of neuropsychological assessment. Three training meetings for general practitioners have also taken place, each of which was attended by ten general practitioners on average. At these training sessions, participants learn how to perform three simple tests. These tests make it possible to rule out possible pathologies, depending on the signs observed, and to confirm certain fears or intuitions. A general practitioner trained in this way will be able to decide whether his patient should undergo further investigations. In this case, the patient can consult the network and follow five steps:

1. The first step, named “detection”, is an initial filter. It sorts out patients who require a detailed assessment and those who do not.
2. If the patient needs a more detailed assessment, the patient can choose which of the neuropsychologists will carry out this test.
3. Depending on the test results, the patient will then choose one of the specialists, who can be a neurologist, a gerontologist or a psychiatrist.
4. The specialist diagnoses the pathology exactly and prescribes an appropriate treatment. The patient’s regular doctor, who will follow the patient, will be free to adapt this treatment as required.
5. At the end of these steps, the patient is examined by a team of health professionals. If the diagnosis is psychopathology, the team will be composed of the regular doctor, a social worker or a coordinator of a CLIC (“Centre Local d’Information et de Coordination” in French, which means Local Information and Coordination Center), the RPM coordinator, and maybe a psychiatrist or a psychologist. If the diagnosis is neurodegenerative pathology, the team will be composed of the regular doctor, a specialist, a speech therapist, a psychologist, a social worker, a gerontological psychologist, the RPM coordinator, and possibly other network partners. If the diagnosis is intermediate, the team will consist of the regular doctor, a specialist, a neuropsychologist, the RPM coordinator, and maybe a psychiatrist. In the case of an undefined condition, the patient’s situation is discussed at a staff meeting.

This patient route implemented in the network reduced by four months the time elapsing between the first contact with the patient and the treatment of this patient. In order to act fast during the first few steps on the route, neuropsychologists and specialists reserve slots in their schedules. Patients can therefore obtain appointments much more quickly than is normally the case. Thanks to the five-step procedure described above, professionals in the network meet only people with real needs.

5.1 Corpus collection and analysis

In order to understand exactly how the RPM functions, we decided to attend all the meetings listed above. During one year, we therefore watched and filmed most of these meetings. The assessment commission has not yet met and the IT commission does not deal with medical or organizational issues. It therefore did not seem to be relevant to film the meetings of the latter commission. Ten meetings, lasting around one hour and a half each, were filmed and now being retranscribed. In

addition, retranscriptions of ten meetings which took place during previous years before the RPM association was officially set up were incorporated into the corpus.

We processed the corpus using the NVivo⁴ software tool, which makes it possible to manage a set of independent documents in the context of the same project. It gives overall results on the whole project, aggregating the analysis carried out on all or some of the documents associated with the project. We coded the corpus according to the theoretical framework adopted: modes of regulation (cf. SEPI matrix in table 1) from the Symbolic Communicational Transactions Theory.

From the operational point of view, RPM activities can be classified as follows: cooperative activities correspond to socio-relational, epistemic and instrumental modes of regulation, and coordination activities correspond to the politico-organizational mode of regulation. It was then proposed to identify the various modes of regulation in the corpus, noting which modes occurred most frequently, and to note any changes from one mode to another. Here we present the initial results obtained, which focus on the identification of the modes of regulation. To handle this corpus, we needed to define how to identify the modes of regulation encountered. It was decided to associate each mode with types of face to face interactions, as illustrated in table 2.

Reflexiveness degree Focus	Introspection	Extrospection
Self	Socio-relational <i>(reaffirming the network objectives, creating a collective identity)</i> to join to describe an experience	Politico-organizational <i>(establishing how to work together)</i> to define good organizational practices
Work	Epistemic <i>(defining care within RPM)</i> To define good health care and ethical practices	Instrumental <i>(defining the global patient coverage)</i> to describe a situation (a patient case) to ask for additional description of the situation to suggest a solution

Table 2. The SEPI matrix applied to RPM activities

In the socio-relational mode of regulation, “to join” refers to the interactions which lead to re-defining the objectives of the network, or creating a collective identity within the RPM. “To describe an experience” corresponds to a professional helping others by explaining a way of handling a problem. In the epistemic mode of regulation, “to define good health care and ethical practices” means attempting to define new practices making for better healthcare. In the instrumental mode of regulation, “to describe a situation” corresponds to professionals explaining patients’ cases to give an overall picture of the problem. “To ask for additional description of the situation” always occurs after a “to describe a situation” interaction and helps professionals who do not know the patient to understand the case. “To suggest a solution”, which is also an interaction which occurs after “to describe the situation”, generates the giving of advice. In the politico-organizational mode of regulation, “to define good organizational practices” means defining the distribution and organization of work.

⁴ NVivo (2002). QSR’s software. <http://www.qsrinternational.com>, July © 2002 QSR International

5.2 First results

Thirteen meetings composed of staffs and meetings of the practical commission have been retranscribed so far, forming a written corpus. Table 3 gives a break-down of this corpus. It indicates the number of speech turns/written characters devoted by each professional to each activity. Table 4 gives the distribution of these transactions according to the modes of regulation.

Table 3. Number of speech turns / Number of characters according to the activity and the

Profession	regular doctor	neurologist	Psychologist	speech therapist	geriatrician	social worker	IS, management consultant	total
to define good organizational practices	41 / 2176	80 / 5567	63 / 5525	13 / 1115	5 / 286	0	184 / 24798	386 / 39467
to join	54 / 10320	40 / 8849	15 / 2472	1 / 22	4 / 742	11 / 1938	45 / 8156	170 / 32499
to describe the situation	84 / 16200	81 / 12998	49 / 8234	91 / 15429	0	0	0	305 / 52861
to ask for a complement of description of the situation	5 / 224	61 / 2702	14 / 603	7 / 239	0	0	7 / 304	94 / 4072
to suggest a solution	4 / 595	25 / 3718	14 / 1893	6 / 542	0	0	6 / 875	55 / 7623
to define good health care and ethical practices	29 / 3696	48 / 9981	33 / 6696	42 / 4963	3 / 505	0	17 / 2893	172 / 28734
to describe an experience	15 / 6083	14 / 7289	7 / 284	8 / 1534	0	0	1 / 69	45 / 15259
Total	232 / 39294	349 / 51104	195 / 25707	168 / 23844	12 / 1533	11 / 1938	260 / 37095	1227 / 180515

profession

Degree of reflexivity	Introspection	Extrospection
Focus		
Self	Socio-relational regulation mode 215 / 47758 (18% / 26%)	Politico-organizational regulation mode 386 / 39467 (31% / 22%)
Work	Epistemic regulation mode 172 / 28734 (14% / 16%)	Instrumental regulation mode 454 / 64556 (37% / 36%)

Table 4. Number of speech turns / Number of characters according to regulation modes (SEPI matrix)

Based on this analysis, it can be concluded that:

- 37 % of the speech turns were in the instrumental mode of regulation, that is to say, they were devoted to working out patients' global coverage. They amounted to 36 % of the whole corpus,
- 31 % of the speech turns corresponded to defining organizational practices, They amounted to 22 % of the corpus,
- 18 % of the speech turns or 26 % of the corpus corresponded to the socio-relational mode of regulation,
- 14 % of the observed speech turns, amounting to 16 % of the corpus, corresponded to the epistemic mode of regulation.

These results support the idea that even conversations which are not directly related to problem-solving play a relevant role in the life of the RPM; they should therefore not be neglected and must, on the contrary, be taken into account in designing a tool favoring cooperation within the network.

It seems important to clarify that these various regulation modes are observable within the same meeting. During meetings we analyzed, the various regulation modes described in SEPI matrix succeeded one another. The first meetings were mainly regulated on a "socio-relational" mode. These interpersonal activities took place alternatively with interactions which constituted the explicit agenda of the first meetings, aiming at defining the therapeutic objectives and the patient global coverage. Epistemic activities took place at the beginning and were made of exchanges between members with different points of view on the nature of the pathologies. These exchanges permitted to come to an agreement on the objectives the network should pursue. These epistemic activities alternated with strategic instrumental activities, aiming at defining exactly the type of patients which were supposed to be treated in the network, and the number of cases the network could treat. These issues were important to define the statutes of the association rendering the network official, and to fill the files for the financing demand. In following meetings, whether in small committee either in plenary session, the politico-organizational productions allowed finalizing the file and beginning to identify the roles which would be played by the members.

Furthermore, interactions between RPM members depend on various activities being organized and carried out. We therefore propose to develop a flexible Information System for the RPM, enabling its members to interact according to the four SEPI modes of regulation, and to shift from one mode to another. In table 5, we suggest some features characteristic of each of the four modes. For instance, global patient coverage requires collective decision-making and the pooling of patient data. Training requires learning activities to be organized, and defining good practices can require the cooperation of editorial staff and document sharing activities. Dialogue functions as well as document sharing and coordination functions both seem to be necessary for the network to function efficiently. The re-defining of the network identity, which was a recurrent theme in discussions between professionals, could be supported by tools facilitating dialogue. However, dialogue may not suffice to deal with the identity issue. This is a broader issue, in our opinion; it has been dealt with by Wenger (2001), who introduced the idea of "communal identity" or "belonging and relationship" which make the stable functioning of networks possible. This point has also been discussed in the field of healthcare (Hardstone et al, 2004).

Reflexiveness degree	Introspection	Extrospection
Focus		
Self	Socio-relational regulation mode Communication features	Politico-organizational regulation mode Coordination features
Work	Epistemic regulation mode Collaborative documents drafting Sharing of documents	Instrumental regulation mode Patient data sharing Collective decision-making Learning

Table 5. Information management features related to the SEPI matrix

We now intend to collect all these features together to create a coherent set. However, it is important to keep in mind healthcare professionals' current attitudes, and to wonder whether they are willing to change their working habits. Would they be satisfied with completely computer-mediated relationships when they have chosen professions dealing with human beings? Some of them may be open-minded to technological change and be willing to adapt their practices to more efficient tools, but the risk has to be faced that others may feel less like becoming involved in these systems and even completely refusing to have anything to do with them. We must therefore find a balance, when it comes to introducing technologies which are essential to networking. Innovations such as the shared medical file or the workflow and the shared diary might be more acceptable, since they would obviously save a considerable amount of time without fundamentally changing professional practices, which already include filling in individual patient files. The issue of mediating meetings is still an open question: mediating them technologically would allow a larger number of professionals to participate, but this would mean making radically changing current practices. The question therefore arises as to how to support key meetings without risking a loss of motivation on the part of the professionals involved.

In this study, the specificity of the collective on which we focused led us to use the SEPI matrix originating from the Theory of Symbolic Communicational Transactions. It is now proposed to see how our research links up with other developments in the field of computer-supported medical activities.

6 CONCLUSION

Aiming at supporting cooperative work in healthcare networks - which we have defined as communities of action (Zacklad, 2003) - we observed one of these networks, RPM, during one year, and from its first steps. In order to understand and define the interactions occurring in this network, we used the theory of the symbolic communicational transactions. It allowed us to classify the interactions regarding to four regulation modes: socio-relational, politico-organizational, epistemic and instrumental. By doing that, we noticed the importance of socio-relational transactions, result which strengthens the idea that these transactions have to be taken into account for the design of an information system supporting cooperation in the network. Besides, our observations allowed us to note that some regulation modes take turn within the same meeting. The information system will then have to allow this flexibility and even to encourage it to guarantee a constant innovation in the network. Finally, we have then suggested computer features which could support the current cooperative activities occurring in RPM. It remains to wonder about the suitability of these features, and about the way of integrating them into the daily practices of the various RPM members. Furthermore, we are also engaged in the analysis of another network, Addica, which is in a much more advanced stage (it officially exists since year 2001). Addica deals with addictive practices (drug, alcohol, food). By doing these parallel analyses in two networks, which are different by the age, the size, and the domain, we wish to check if the observations made and the results obtained further to the analysis of RPM, are reusable for another network. We could then intend to define generic principles for the design of flexible information systems to support these particular communities: healthcare networks.

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