

Using social networks for knowledge management

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Abstract

Using social networks to support knowledge management and collaboration in an organisation is an interesting approach. In our work of systems design we focus on awareness systems using mobile technologies, sensors and notification systems. Being aware of others' activities and availability also make people more aware of the social networks in the organisation. My contribution to this workshop is that social networks in an organisation can be supported through awareness information.

Introduction

The concept of social networks origins from the area of network analysis, a descriptive and analytical discipline. A network is “generally defined as a specific type of relation linking a defined set of persons, objects, or events” (Mitchell (1969) cited by Knoke & Kuklinski (1983)). The definition does not include only persons but also objects and events, or anything that can be included in a relationship. Social networks, on the other hand, are represented by a set of persons and relationships between them. From these definitions one can see that the “social” part in social networks implies that the network includes only persons. There is also a concept called computer supported social networks, which only includes relationships supported through computer environments, e.g., chat, news, and e-mail (Wellman, Salaff, Dimitrova, Garton, Gulia & Haythornthwaite 1996).

Social networks, whether supported by relationships established through computer environments or not, serve as a base for communities of practice. Communities of practice (Brown & Duguid 1991, Lave & Wenger 1991), in turn, serve as a base for knowledge management (Brown & Duguid 2000). The interest for social networks has, therefore, recently increased.

The focus of this workshop is on how such individual social networks in an organization can be adapted and used to analyse cooperation and serve as a framework for new systems design. For the purpose of knowledge management it would be easy to think that if we could formalise, store and visualise the social networks in an organisation, then we would have computer support for finding who knows what. However, in the light of the many attempts to create traditional knowledge systems (e.g., gIBIS (Conklin & Begeman 1988, Ackerman & McDonald 1996)) based on individuals' knowledge, with the purpose of the stored “knowledge” being reused by others, a word of caution may be in place.

I do not believe that social networks can be collected, formalised and used globally to provide new contacts for others in the organisation, although there may be other possibilities to use social networks. One example is the work with ContactMap by Nardi, Whittaker, Isaacs, Creech, Johnson & Hainsworth (2002). ContactMap supports individuals' in managing their personal social network, for example, remembering who is in the social network, connections between people, details about people, exchanged artefacts, task status etc.

My contribution to this workshop is the proposition that existing social networks can be enhanced through supporting awareness information (Dourish & Belotti 1992), thereby supporting knowledge management, specifically who knows what, within the organisation. This opinion is based on results from an ethnographic study of a consultancy firm, CompC (Groth & Bowers 2001), and other similar studies (e.g. (Fitzpatrick 2001)).

CompC

In our study of CompC we identified a pattern of situatedness as members of the organisation try to find things out. Who happens to be around at the moment clearly influences who is asked. There is no order in how members go about when finding things out. In other words, it is not obvious that people would turn to a computer application before turning to an individual as a problem arises.

Members at CompC also have a clear view of whom to ask about a problem, and in some project specific situations there are only a few persons that could help with the problem. An example of this situation is when two programmers in a project could not define an interface between their parts. The only two persons that would know about this were unavailable for the rest of the week. Instead, the two programmers reached an agreement for the time being. No computer support facilitating social contacts between people would have helped in this situation.

Another result from our study was that people did not object to helping each other. On the contrary, helping others is something the management encourages. In most cases problems are solved on the spot, but there are occasions when an unsolved problem happens to be solved by sheer coincidence. An example of such an occasion is when a consultant was told by his manager to find out more about a certain technique. The consultant was advised to ask another manager, who usually knew about things like this. However, this time, the other manager did not have a solution, nor did he know anyone else that could help. The problem was postponed. A couple of days after the problem was identified a group of persons, including the consultant's manager, had a meeting about a different topic. During this meeting, the problem happened to be mentioned, and a person attending the meeting happened to know whom to talk to. In this situation there did exist another person knowing who could help with the problem. However, how to support this through a formalised social network without involving the same problems as in traditional knowledge systems is for me difficult to understand. It might simply be the case that the best solution is to let problems rest to be solved later (or solved in another way) instead of designing complex systems that may only be of use in very specific, seldom occurring, situations.

In most cases problems at CompC were solved quite smoothly. In those cases where solving the problem was delayed due to key persons being unavailable, or due to a person not knowing whom to ask, as in the two examples given above, I can't see how a formalised social network would have helped. One could argue that people being new in an organisation would benefit from a formalised social network since they know nothing or very little about the organisation. On the other hand, which organisation does not have a program for new personnel, including a contact person. Therefore, I support the idea of enhancing the existing social networks, instead of trying to formalise them. One way to accomplish this is, from my point of view, through supporting awareness information. Actually, enhancing social networks through awareness of others' activities and availability is one way to "visualise" parts of the social networks (or potential such) within the organisation.

Collection

Social networks are informal constellations of relationships between people that can't be fully "collected" automatically. To some extent they can, through e-mail logging, documents etc, but there will always be parts that are not available through any kind of documentation, i.e., the informal¹ contacts including the most valued relationships. For the purpose of social network analysis information is usually gathered through interviews, questionnaires and observations (Garton, Haythornthwaite & Wellman 1999). Although a large amount of information about computer supported social networks can be gathered by logging the media used, the overwhelming amount of information will make it difficult to interpret and analyse (Garton et al. 1999). The problem of an overwhelming amount of information was also a problem in traditional knowledge systems, as well as the problem of changing and rapidly growing amounts of stored information.

Being aware of the social networks that exist within the organisation is important for the aspect of knowledge management. The social networks serve as a base or ground for communities

¹With informal contacts I mean such that go beyond the formal ones that are established through the organisation (e.g., through sections, projects, location, etc) and visible through organisational charts etc.

of practice. Poor social networks will most likely produce poor communities of practice. People need the infrastructure of social networks to establish communities of practice, which, in turn, will increase exchange of knowledge within the organisation. Social networks are also important for the purpose of knowing who to ask in different situations.

For the purpose of supporting communities of practice and who knows what in an organization it is important to make people aware of the existing social networks. Some of that information can be collected through administrative information, e.g. through e-mail groups, notification systems groups, and organisational information. This kind of information represents social networks based on specific criteria, e.g., membership in certain groups. The information serving as a base for such social networks should be validated by being used for other purposes, for example, a person being part of an e-mail group can probably make an active choice of being a member of that e-mail group or not. For the purpose of continuously supplying information about social networks we have to rely on automatic methods. The effort of collecting such information through any manual methods will be too high (cf. problems in traditional knowledge systems).

Identifying and analysing existing social networks, could be one way of measuring how technical support for awareness information effects the social networks within the organisation. Garton et al. (1999) talk about ego-centred and whole-network when doing social network analysis. Ego-centred social networks are those subjectively provided by an individual. Whole-network social networks are those based on a specific criterion such as department or kinship. When doing social network analysis it is important to consider aspects such as relations, ties, multiplexity, and composition, as well as range (i.e., size and heterogeneity), centrality (who is central in relation to the media used), and roles (e.g., teacher and students) (Garton et al. 1999). These are most likely aspects that also needs to be considered when identifying social networks in an organisation, either for the purpose of measuring effects for collaboration, or for trying to formalise social networks.

Tools

Based on the results of our CompC study we focus on alternatives to traditional knowledge systems in order to design computer support for knowledge management within organisations. Instead, we work with technologies supporting awareness information about people's activities and availability. Being aware of others' activities, indirectly "visualises" social networks (or potential such) within the organisation. For example, being aware of members of a certain project implicates being aware of parts of the social network of that project. Similarly, being aware of members of a certain news group, notification group or e-mail group implicates being aware of parts of the social networks of those groups. The more detailed the information is that makes a person aware of others' activities, the more aware the person will be about the details of the social network. However, one must also bear in mind that the more details involved, the more complicated are the "collection" mechanisms. There is also a balance of having enough information for the purpose. One more level of detail might not provide any extra information in the end.

Application

One way to support social networks is through awareness information about people's activities and availability. There are two approaches of supplying awareness about others' activities and availability that we are presently working with. In the first approach we use sensors, mobile technology, and notification systems to build applications that supply the necessary information. One example is using Bluetooth technology on mobile phones to show approximate availability by detecting location (location detection has been made using other kind of technologies, e.g. the Locator system (Harper 1992)). Another example is using smart phones together with computers when communicating through notification systems. In the second approach we are using already existing information systems to build a structured and searchable information space for the appropriate information. In the case with CompC we can use information about projects showing who is working in a project and on which parts, information from CVs, and individually supplied information such as lists of suppliers.

This kind of awareness information visualises parts of the social networks that exists in the organisation. Nodes in the social networks are represented by individuals, and in some cases

relationships between individuals are represented, e.g., when showing several individuals working in the same project.

Since the technologies we focus on in our design work continuously provides awareness information, the social networks that exists within the organisation are continuously supported through the awareness of others' activities and availability. Being aware of what others are involved in also makes people more aware of the social networks that exists within the organisation.

Evaluation

Using social networks in a traditional way, i.e., in an informal way where they grow by themselves, is a starting point for knowledge management as well as collaboration. Supporting personal contacts in the use of social networks most likely facilitates the collaborative activities between people in the organisation. It is not only the end contact between two persons that are important for knowledge dissemination and collaboration, but also the contacts in between. The search for the right person, through talking to others, makes people aware of the activities going on in the organisation. Supporting social networks in an organisation also supports a natural way of finding things out.

However, I'm quite sceptical to the approach of trying to collect, store and somehow visualise an organisations social network in order to enhance collaboration among members. Even though parts of the social networks can be collected, stored and visualised, I don't believe that it will fulfil its purpose. People will still turn to other persons to find new contacts, simply because it is the easiest and fastest way to do it.

Instead of finding ways of using technologies to collect, store and visualise social networks, that effort should be put on technologies to support the enhancement of the existing social networks, e.g., through awareness applications or structured and searchable information about people's activities and availability.

Discussion

When focusing on technology for knowledge management we must not forget the importance of social contacts in cooperative work. Talking to other persons creates moments when people not only learn what they specifically are looking for, but also other things just by the opportunity of asking and discussing things. To support routines that create conditions for social networks is an interesting approach to knowledge management. Based on the results from an ethnographic study of a consultancy firm I have chosen the approach to support knowledge management, with a focus of finding who-knows-what, through awareness mechanisms. I also believe that supporting awareness mechanisms, in turn, supports and to some extent visualises social networks. A couple of questions regarding this awareness approach has been pointed out by the organisers of the workshop.

One question is whether the awareness of others' activities is equivalent to knowing the details of existing social networks. If they are not equivalent, what portions of the social network does awareness facilitate?

I do not believe that being aware of others' activities and availability provides all the details about the existing social networks. However, there is a possibility that such awareness information can provide enough information about existing social networks. On the other hand, the details about the existing social networks may be very difficult to capture through technology, and, if possible to capture, it may not be of interest to use because people may prefer learning about the details through talking to others.

Another question is what the technological supports do. Why visualise any social networks at all (e.g., those based on people working in similar projects) if taking a strong position for awareness?

I believe that supporting people's awareness of others' activities and availability help people extend their own and become more aware of others' social network. This kind of awareness information can be provided by, for example, notification systems, video links, and location detection applications. Through these technologies parts of the existing social networks become visible, e.g., in a notification system people can see who is a member of a group. One question is to what extent other technologies can be used, and be of use, to provide more detailed information about existing social networks.

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